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**MODELLING GOVERNMENT EXPENDITURES AND
ECONOMIC GROWTH NEXUS IN SAUDI ARABIA:
1968-2010**

by

MOHAMMED MOOSA AGELI

**Thesis submitted in fulfilment of the requirements for the
degree of Doctor of Philosophy at Durham University**

**School of Government and International Affairs
Durham University**

2012

Modelling Government Expenditures and Economic Growth Nexus in Saudi Arabia: 1968 -2010

By

Mohammed Moosa Ageli

Abstract:

Economic growth and development remains an important policy issue for most of the states in the world, which is a particular issue for late developing countries, as they have very much relied on 'state' for economic growth and development. As a result, the experience in the 20th century demonstrates a secular increase in the growth of government expenditures all over the world. Hence, the role of government expenditures in contributing to long run economic growth continues to be an important topic and the subject of much debate.

Saudi Arabia economy is one of late developing countries. While its economy is characterised by an open and private economy, the government remains to have a large role in the economy through its expenditures financed largely by revenues generated from oil. While the Saudi economy has grown and developed, the government has also responded to the increased demand for social services such as education and healthcare in addition to other infrastructure investments for development purpose. Therefore, the process of economic growth and development has resulted in growth of government expenditures.

This research, thus, aims at modelling of government expenditures and economic growth nexus in the case of Saudi Arabia for the period of 1968-2010 by testing a number of models developed in the literature: Wagner's Law, Keynesian Relations and Peacock and Wiseman's Displacement Effect. The analysis modelled within the time series econometric techniques including co-integration test, Granger causality test and the error correction model (ECM).

The findings obtained from the analyses find that the Wagnerian proposition can explain the growth of government in Saudi Arabia, which holds for both the oil and non-oil income cases. The result indicates the existence of strong feedback causality for all the versions of Wagner's law in the long run. The findings also note that the three versions of Keynesian Relations found to be held for both general income and non-oil income in the case of Saudi Arabia. In addition, the findings also support for the Displacement Effect mainly due to international political developments and trends in oil prices, as such events resulted deviation from the linear growth in the government expenditures over the average growth and it is observed that government expenditure growth continued its gradual growth from the new level.

This study, thus, concludes that growing economic activity of the state has marked the Saudi Arabian economy over the period in question. While this partly can be explained due to economic reasons such as the need for economic development and responding to the demands of a growing population, but also the rentier economy nature of the Saudi political economy necessitates increasing government expenditures for political stability.

DECLARATION

I hereby declare that no portion of the work that appears in this study has been used in support of an application of another degree in qualification to this or any other university or institution of learning.

STATEMENT OF COPYRIGHT

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DEDICATION

I dedicate this work to my family, then to those interested in government expenditure and economic growth.

ACKNOWLEDGMENT

First of all, praise is to Allah, on whom ultimately we depend for sustenance and guidance.

I am grateful to my family for being there for me; as without their support I would not have come thus far and for Amal.

I must express my gratitude to my supervisor, whom I consider as my brother, Dr. Mehmet Asutay whose guidance, careful reading and constructive comments were invaluable. His efficient contribution helped me to develop this research into its final form.

Thank you for my Examiners, Professor Peter Jackson and Professor Habib Ahmed, for their comments.

Many thanks, to all whose names do not appear here and without whom this study would not have been possible.

M. M. Ageli
October 2011
Durham

TABLE OF CONTENTS

Abstract	i
Declaration	ii
Statement of Copyright	iii
Dedication	iv
Acknowledgment	v
Table of Contents	vi
List of Tables.....	xi
List of Figures	xiv

CHAPTER ONE

INTRODUCTION

1.1 Overview	1
1.2 Aim and Objectives	3
1.3 Significance of the Study	4
1.4 Research Rationales	5
1.5 Modelling and Research Method.....	6
1.6 Overview of the Research	9

CHAPTER TWO

FINANCING ECONOMIC DEVELOPMENT THROUGH STATE EXPENDITURES IN LATE DEVELOPING COUNTRIES

2.1 Introduction	11
2.2 Late Developmentalism.....	12
2.2.1 Concept.....	12
2.2.2 Lack of Private Capital	13
2.2.3 Rationale for Public Expenditure	14
2.3 Utilisation of Government Expenditure for Economic Growth.....	16
2.4 Impact of Government Expenditure on Economic Growth in Short and Long -Run.....	20
2.5 Critical Approach to Government Expenditures.....	21
2.6 Conclusion	24

CHAPTER THREE

GOVERNMENT GROWTH: SURVEYING THEORIES AND MODELS

3.1 Introduction	26
3.2 The Perception of Government (State) Over Time	27
3.3 The Economic Rationale for Government.....	28
3.3.1 Market Failure.....	29
3.3.1.1 Public Goods	30
3.3.1.2 Externalities	30
3.3.1.3 Imperfect Market.....	31
3.3.1.4 Imperfect Information	32
3.3.2 Government Failure	32
3.4 Theoretical Explanations for the Size and Growth of Government.....	33

3.4.1 Macroeconomic Models of Government Growth.....	34
3.4.1.1 Wagner's Law of "Expending State Activity"	34
3.4.1.2 The Displacement Hypothesis.....	36
3.4.1.2.1 The Displacement Effect: Structural Break.....	39
3.4.1.2.2 The Displacement Effect: Ratchet Effect	40
3.4.1.3 Keynesian Economic Growth and Government Expenditures	40
3.4.2 Microeconomic Models of Government Growth	41
3.4.2.1 Baumol's Differential Productivity Growth	41
3.4.2.2 Bacon and Eltis Model.....	42
3.4.3 Public Choice Approach to the Growth of Government	43
3.4.3.1 Bureaucracy and the Growth of Government.....	43
3.4.3.2 Interest Groups and the Growth of Government	45
3.4.3.3 Median Voter and Redistributors Government Model	47
3.4.3.4 Fiscal Illusion	48
3.5 The Combined Model of Government Growth	48
3.6 Rentier State and Government Expansion: A Political Economy Approach	50
3.7 Surveying the Empirical Studies on Government Growth	52
3.8 Conclusion	58

CHAPTER FOUR

UNDERSTANDING GOVERNMENT EXPENDITURE: CONCEPT, DEFINITION, AND MEASUREMENT

4.1 Introduction	60
4.2 The Confusing of Concepts.....	60
4.2.1 The Concept of the State	61
4.2.2 The Concept of Government.....	62
4.2.3 The Concept of Public Sector	62
4.3 The Problems in the Measurement of the Government.....	63
4.3.1 Absolute or Relative Size	64
4.3.2 Normal or Real Values	64
4.3.3 The Implications of Deflating Public Expenditures by the GDP Deflator.....	64
4.3.4 The Measurement of Relative Size.....	65
4.3.4.1 The Public Revenues Ratio.....	65
4.3.4.2 The Ratio of Public Expenditure	66
4.3.5 Public Employment Measurement.....	69
4.3.6 The Measurement of the OFF-Budget Activities of Government.....	69
4.3.7 Tax Expenditure	69
4.3.8 Law and Regulation.....	70
4.4 Conclusion	72

CHAPTER FIVE

GOVERNMENT EXPENDITURES AND ECONOMIC DEVELOPMENT IN SAUDI ARABIA: DEVELOPMENTS AND TRENDS

5.1 Introduction	74
5.2 Stages of Economic Development in Saudi Arabia.....	75
5.2.1 Stages of Economic Development.....	76
5.2.2 Human Development Index (HDI)	83
5.2.3 Budgeted Expenditures in Saudi Arabia during the Development Plans.	85
5.3 Development and Trends in Government Expenditures in Saudi Arabia	87
5.4 General Trends in Government Size	93

5.5. Government Social Expenditures.....	96
5.5.1 Education Expenditures	98
5.5.2 Social Development and Health	101
5.5.3 Community and Social Services.....	105
5.5.4 Social Security and Welfare	108
5.5.5 Housing and Community Development	111
5.5.6 General Government Services.....	114
5.6 Defence Expenditures.....	114
5.7 Transfer Expenditures.....	117
5.8 Sovereign Welafer Fund (SWF)	117
5.9 Conclusion	119

CHAPTER SIX

MODELLING GOVERNMENT GROWTH AND ECONOMIC GROWTH NEXUS FOR SAUDI ARABIA

6.1 Introduction	121
6.2. Modelling Wagner's Law	122
6.2.1 Peacock and Wiseman Version (1961) of Wagner's Law	123
6.2.2 Pryor version (1968) of Wagner's Law.....	124
6.2.3 Goffman (1968) and Goffman and Mahar version (1971) of Wagner's Law	124
6.2.4 Musgrave version (1969) of Wagner's Law	125
6.2.5 Gupta version (1967) of Wagner's Law	126
6.2.6 Mann's version (1980) of Wagner's Law	127
6.3 Modelling Peacock and Wiseman's Displacement Hypothesis	127
6.4 Modelling Keynesian Relation in Explaining Growth of Government Expenditures and Economic Growth Nexus.....	129
6.5 Identification of the Empirical Models and Data.....	129
6.5.1 Wagner's Law and its Variants.....	130
6.5.2 Peacock and Wiseman Models	131
6.5.3 Modelling Keynesian Relation	133
6.6 Estimation Proces.....	134
6.6.1 The Unit Root Test	134
6.6.2 Cointegration Test.....	136
6.6.3 Causality test.....	136
6.7 Conclusion	139

CHAPTER SEVEN

SEARCHING FOR WAGNER'S LAW IN SAUDI ARABIA: AN EMPIRICAL ANALYSIS

7.1 Introduction	140
7.2 Surveying the empirical studies on Wagner's Law.....	140
7.3 Formulating the versions of Wagner's Law for Saudi Arabia.....	141
7.4 The Empirical results and analysis with OLS	146
7.4.1 Testing the version of Wagner's Law with real GDP	147
7.4.2 Testing the version of Wagner's Law with real Non-Oil GDP.....	151
7.5 Empirical Results of Unit Roots and Co-integration Test	155
7.5.1 Co-integration Test Johansen Method	159
7.5.1.1 Co-integration Test with (Real GDP).....	160
7.5.1.2 Co-integration Test with (Real Non-Oil GDP)	160

7.6 Causality Test for Wagner's Law	161
7.6.1 Granger Causality Test	162
7.6.1.1 Granger Causality Test with Real GDP	162
7.6.1.2 Granger Causality Test with Real Non-Oil GDP	165
7.6.2 Error Correction Model (ECM)	168
7.6.2.1 Error Correction Model (ECM) with (Real GDP).....	169
7.6.2.2 Error Correction Model (ECM) with (Real Non-Oil GDP)	170
7.7 Contextualising the Results.....	171
7.8 Conclusion	171

CHAPTER EIGHT

LOCATING KEYNESIAN RELATIONS IN ECONOMIC GROWTH AND GOVERNMENT EXPENDITURES NEXUS IN SAUDI ARABIA

8.1 Introduction	174
8.2 The Keynesian Relation.....	175
8.3 Surveying Empirical Studies on Keynesian Relation	176
8.4 Formulating of the versions of Keynesian Relations and applying Econometric Methodology	177
8.5 Searching for Keynesian Relations in Saudi Arabia	179
8.5.1 Ordinary Least Square (OLS) Results	180
8.5.1.1 Testing Keynesian Relation with Real GDP	180
8.5.1.2 Testing Keynesian Relation with Non-Oil Real GDP	181
8.5.2 Unit Roots Test.....	183
8.5.3 Cointegration Test.....	184
8.5.4 Causality Test.....	186
8.5.4.1 Granger Causality Test for Keynesian Relation with Real GDP	186
8.5.4.2 Granger Causality Test for Keynesian Relation with Non-Oil Real GDP	188
8.5.5 Error Correction Model (ECM) in Keynesian Relation.....	189
8.6 Conclusion	191

CHAPTER NINE

LOCATING DISPLACEMENT EFFECT IN THE GOVERNMENT EXPENDITURES IN SAUDI ARABIA

9.1 Introduction	193
9.2 The Displacement Effect Hypothesis.....	196
9.2.1 Structural Break	196
9.2.2 A Ratchet Effect	197
9.2.3 Empirical Testing of Displacement Effect: Previous Studies	197
9.3 Modelling Displacement Effect in Econometric Methodology	198
9.4 Findings for Displacement Effect in the case of Saudi Arabia with real GDP	200
9.4.1 Peacock and Wiseman Hypothesis with real GDP and Economic and Political Dummy Variables, 1968-2010	200
9.4.2 Testing Displacement Effect through Chow Test	201
9.4.2.1 Testing for Displacement Effect for 1968 to 1989 with Real-GDP	202
9.4.2.2 Testing for Displacement Effect for 1990 to 2010 with Real-GDP	203
9.4.2.3 Structural Break – Chow Test with Real GDP	204
9.5 Findings for Displacement Effect in the case of Saudi Arabia with Non-Oil-GDP	205
9.5.1 Testing for Displacement Effect for 1968 to 1989 with Non Oil real GDP	206
9.5.2 Testing for Displacement Effect for 1990 to 2010 with Non Oil real-GDP	207
9.5.2 Structural Break – Chow Test with Non Oil real-GDP	208

9.6 Time Series Analysis in Locating the Displacement Effect	208
9.6.1 Unit Roots Test.....	209
9.6.2 Co-integration Test	211
9.6.2.1 Co-integration Test with real GDP	212
9.6.2.2 Co-integration Test with real Non-Oil GDP	213
9.6.3 Causality Test.....	215
9.6.3.1 Granger Causality Test.....	215
9.6.4 Error Correction Model (ECM)	217
9.7 Conclusion	219

CHAPTER TEN

DISCUSSIONS AND CONCLUSION

10.1. Overview	221
10.2. Summary Analysis Findings	222
10.2.1 Reflecting on the Findings	227
10.3. Policy Implications	229
10.4 Policy Recommendations	231
10.5 Future Research	232
10.6. Epilogue.....	233

BIBLIOGRAPHY	234
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LIST OF TABLES

Table 1.1: Six Versions of Wagner's Law with real GDP / Non-Oil GDP	7
Table 1.2: Three Versions of Keynesian Relations with Real GDP/ Non-Oil GDP	7
Table 1.3: The original Version of Peacock-Wiseman with Real GDP / Non-Oil GDP	7
Table 3.1: Surveying the Empirical Studies on Growth of Government	53
Table 4.1: The Numerators Measures	67
Table 4.2: UK Public Expenditure Ratios 1977 and 1987	72
Table 4.3: UK Public Expenditure Ratios on Goods and Services 1977 and 1987	73
Table 5.1: Annual Changes in Gross Domestic Product by Sectors	80
Table 5.2: Financial allocation for Human (HR) Resources Developments (in billion SR)	84
Table 5.3: Gross Domestic Product and Total Expenditure at Current Price	90
Table 5.4: Gross Domestic Product and Total Expenditure at Constant Price (1999=100)	92
Table 5.5: The Ratio of Public Revenue in GDP	95
Table 5.6: Government Final Consumption expenditure in Purchaser's Value	97
Table 5.7: The Ratio of Education Expenditures in Government Expenditure and GDP	100
Table 5.8: The Ratio of Health Expenditures in Government Expenditure and GDP	104
Table 5.9: The Ratio of Community and Social Services Expenditures in Government Expenditure and GDP	107
Table 5.10: The Ratio of Social Security and Welfare Expenditures in Government Expenditure and GDP	110
Table 5.11: The Ratio of Housing and Community Development Expenditures in Government Expenditure and GDP	113
Table 5.12: The Ratio of Total Expenditures (without Defence)	116
Table 5.13: Largest GCC SWFs by Assets under Management	118
Table 6.1: Six Versions of Wagner's Law with real GDP	122
Table 6.2: Definition of Variables	123
Table 6.3: Six Versions of Wagner's Law with Non-Oil Sector of real GDP	130
Table 6.4: Six Versions of Wagner's Law with real Oil Sector of real GDP	130
Table 6.5: The original Version of Peacock-Wiseman with Real GDP	131
Table 6.6: Peacock-Wiseman Hypothesis with Real Non-Oil Sector of GDP	131
Table 6.7: The original Three Versions of Wagner's Law	133
Table 6.8: Three Versions of Keynesian Relations with real GDP	133
Table 6.9: Three Versions of Keynesian Relations with real Non-Oil Sector of GDP	134
Table 7.1: Six Versions of Wagner's Law with real GDP	142
Table 7.2: Regression results for Peacock & Wiseman Version with Real GDP	147
Table 7.3: Regression results for Pryor Version with Real GDP	148
Table 7.4: Regression results for Guffman Version with Real GDP	149
Table 7.5: Regression results for Musgrave Version with Real GDP	149
Table 7.6: Regression results for Gupta Version with Real GDP	150
Table 7.7: Regression results for Mann Version with Real GDP	151
Table 7.8: Six Versions of Wagner's Law with real Non-Oil Sector of GDP	152
Table 7.9: Regression results for Peacock and Wiseman Version with Real Non-Oil GDP	152
Table 7.10: Regression results for Pryor Version with Real Non-Oil GDP	153
Table 7.11: Regression results for Guffman Version with Real Non-Oil GDP	153
Table 7.12: Regression results for Musgrave Version with Real Non-Oil GDP	154
Table 7.13: Regression results for Gupta Version with Real Non-Oil GDP	155
Table 7.14: Regression results for Mann Version with Real Non-Oil GDP	155
Table 7.15 A: Augmented Dickey-Fuller for stationary Unit Root Tests for Real GDP and Non Oil GDP	157
Table 7.15 B: Co-integration results with real GDP	158
Table 7.15 C: Co-integration results with real Non-Oil GDP	158
Table 7.16: Johansen Co-integration Test results with real GDP	160
Table 7.17: Johansen Co-integration Test results with real Non-Oil GDP	161
Table 7.18: Granger Causality test for Peacock and Wiseman Version with real GDP	162

Table 7.19: Granger Causality test for Pryor Version with real GDP	163
Table 7.20: Granger Causality test for Goffman Version with real GDP	163
Table 7.21: Granger Causality test for Musgrave Version with real GDP	164
Table 7.22: Granger Causality test for Gupta Version with real GDP	164
Table 7.23: Granger Causality test for Mann Version with real GDP	165
Table 7.24: Granger Causality test for Peacock and Wiseman Version with real Non Oil GDP	166
Table 7.25: Granger Causality test for Pryor Version with real Non Oil GDP	166
Table 7.26: Granger Causality test for Goffman Version with real Non Oil GDP	167
Table 7.27: Granger Causality test for Musgrave Version with real Non Oil GDP	167
Table 7.28: Granger Causality test for Gupta Version with real Non Oil GDP	168
Table 7.29: Granger Causality test for Mann Version with real Non Oil GDP	168
Table 7.30: Causality with Error Correction Model (ECM) test with real GDP	169
Table 7.31: Causality with Error Correction Model (ECM) test with real Non-Oil GDP	170
Table 8.1: The original Three Versions of Wagner's Law	177
Table 8.2: Three Versions of Keynesian Relations with real GDP	177
Table 8.3: Three Versions of Keynesian Relations with real Non-Oil Sector of GDP	180
Table 8.4: Regression results for Peacock & Wiseman Version of Keynesian Relation with Real GDP	180
Table 8.5: Regression results for Goffman Version of Keynesian Relation with Real GDP	181
Table 8.6: Regression results for Gupta Version of Keynesian Relation with Real GDP	181
Table 8.7: Regression results for Peacock & Wiseman Version of Keynesian Relation with Real Non Oil GDP	182
Table 8.8: Regression results for Goffman Version of Keynesian Relation with Real Non Oil GDP	182
Table 8.9: Regression results for Gupta Version of Keynesian Relation with Real Non Oil GDP	183
Table 8.10: Augmented Dickey-Fuller for stationary Unit Root Tests for Real GDP and Non-Oil GDP	183
Table 8.11: Co-integration Test results with real GDP	184
Table 8.12: Co-integration Test results with real Non-Oil GDP	184
Table 8.13: Johansen Co-integration Test results with real GDP	185
Table 8.14: Johansen Co-integration Test results with real Non-Oil GDP	186
Table 8.15: Granger Causality test for Peacock and Wiseman Version with real GDP	187
Table 8.16: Granger Causality test for Goffman Version with real GDP	187
Table 8.17: Granger Causality test for Gupta Version with real GDP	188
Table 8.18: Granger Causality test for Peacock and Wiseman Version with real Non Oil GDP	188
Table 8.19: Granger Causality test for Goffman Version with real Non Oil GDP	189
Table 8.20: Granger Causality test for Gupta Version with real Non Oil GDP	189
Table 8.21: Causality with Error Correction Model (ECM) test with (Real GDP	190
Table 8.22: Causality with Error Correction Model (ECM) test with (Real Non-Oil GDP	190
Table 9.1: The original Version of Peacock-Wiseman with Real GDP	198
Table 9.2: The Version of Peacock-Wiseman with Real Non-Oil Sector of GDP	198
Table 9.3: Displacement Effect with Political and Economic Variables (Real GDP) : 1968-2010	201
Table 9.4: Displacement Effect with Real GDP, 1968-1989	202
Table 9.5: Displacement Effect with Real GDP, 1990-2010	204
Table 9.6: Residual Sum of Squares with Real GDP	205
Table 9.7: Displacement Effect with non-oil real GDP 1968 to 2010	206
Table 9.8: Displacement Effect with non-oil real GDP 1968 to 1989	207
Table 9.9: Displacement Effect with non-oil real GDP 1990 to 2010	207
Table 9.10: Residual Sum of Squares with Non-Oil real GDP	208
Table 9.11: Unit Root Test for Stationary for Real GDP	210
Table 9.12: Contegration Regressions Results for Real GDP	211
Table 9.13: Contegration Regressions Results for Real Non Oil GDP	211
Table 9.14: Johansen Cointegration Test results (Real GDP) 1968 to 2010	213
Table 9.15: Johansen Cointegration Test results (Real GDP) 1968 to 1989	213
Table 9.16: Johansen Cointegration Test results (Real GDP) 1990 to 2010	213
Table 9.17: Johansen Cointegration Test results (Real Non Oil GDP) 1968 to 2010	214

Table 9.18: Johansen Cointegration Test (Real Non-Oil GDP) 1968-1989	214
Table 9.19: Johansen Cointegration Test (Real Non-Oil GDP) 1990-2010	215
Table 9.20: Granger Causality test for Peacock and Wiseman Version for 1968-2010 with Real GDP	216
Table 9.21: Granger Causality test for Peacock and Wiseman Version for 1968-1989 with Real GDP	216
Table 9.22: Granger Causality test for Peacock and Wiseman Version from 1990- 2010 with Real GDP	216
Table 9.23: Granger Causality test for Peacock and Wiseman Version from 1968- 2010 with Real Non Oil GDP	217
Table 9.24: Granger Causality test for Peacock and Wiseman Version from 1968-1989 with Real Non-Oil GDP	217
Table 9.25: Granger Causality test for Peacock and Wiseman Version from 1990-2010 with Real Non-Oil GDP	217
Table 9.26: Causality with Error Correction Model (ECM) test for 1968-2010 with Real GDP	218
Table 9.27: Causality with Error Correction Model (ECM) test 1968-1989 with Real GDP	218
Table 9.28: Causality with Error Correction Model (ECM) test 1990-2010 with Real GDP	218
Table 9.29: Causality with Error Correction Model (ECM) test 1968-2010 with Real Non Oil GDP	219
Table 9.30: Causality with Error Correction Model (ECM) test 1968-1989 with Real Non Oil GDP	219
Table 9.31: Causality with Error Correction Model (ECM) test 1990-2010 with Real Non Oil GDP	219
Table 10.1: Summary of the main Results Theories Explaining the Government Expenditure Growth with Real GDP and Non Oil Real GDP	223

LIST OF FIGURES

Figure 3.1 Illustrating Displacement Effect	38
Figure 3.2 Niskanen's Model of Bureaucracy	44
Figure 3.3 The Combined Model.....	49
Figure 5.1 The Growth in GDP	81
Figure 5.2 The Growth in Oil Sector.....	81
Figure 5.3 The Growth in Non Oil Sector.....	82
Figure 5.4 The Growth of Total GDP, Oil Sector and NonOil Sector	82
Figure 5.5 Human Developments Index: Trends 1970 to 2009	84
Figure 5.6 Trends in the Share of Government Expenditure in GDP.....	89
Figure 5.7 The Expenditure of Education in Saudi Arabia	98
Figure 5.8 The ratio of education expenditures in government expenditure in Saudi Arabia	98
Figure 5.9 The ratio of Expenditure of Education in GDP in Saudi Arabia.....	99
Figure 5.10 The Expenditure of Health in Saudi Arabia	102
Figure 5.11 The Ratio of Health Expenditures in Government Expenditure in Saudi Arabia	102
Figure 5.12 The Ratio of Health Expenditures in GDP	103
Figure 5.13 Community and Social Services in Saudi Arabia.....	105
Figure 5.14 The Ratio of Community and Social Services Expenditures in Government Expenditure in Saudi Arabia.....	105
Figure 5.15 The Ratio of Community and Social Services Expenditures in GDP	106
Figure 5.16 The Expenditure of Social Security and Welfare Sector in Saudi Arabia.....	108
Figure 5.17 The ratio of Social Security and Welfare expenditures in government expenditure in Saudi Arabia.....	108
Figure 5.18 The ratio of Social Security and Welfare expenditures in GDP	109
Figure 5.19 The Expenditure of Housing and Community Development Sector in Saudi Arabia ..	111
Figure 5.20 The Ratio of Housing and Community Development Expenditures in Government Expenditure in Saudi Arabia.....	111
Figure 5.21 The ratio of housing and community development expenditures in GDP	112
Figure 5.22 The Expenditure of General Government Services in Saudi Arabia.....	114
Figure 5.23 The Expenditure of Defence Sector in Saudi Arabia	115
Figure 5.24 The Transfer Expenditure in Saudi Arabia	117
Figure 9.1 Share of Government Expenditure in GDP.....	194
Figure 9.2 Trends in the Absolute Level of Government Expenditures in Saudi Arabia	195

CHAPTER 1

INTRODUCTION

1.1. OVERVIEW

Economic growth and development objectives remain to be the main pillar of all the governments in the world in general and in particular the developing countries, which require large and sustainable capital accumulation and human resources. However, in the initial stages of economic development, as in the case of late developing countries, capital accumulation has generally been either non-existent or limited. Therefore, in addition to responding to the neo-classical notion of ‘market failure’, the states in developing countries undertook the role of providing capital for economic and human development as a result. Thus, the experience in the 20th century demonstrates a secular increase in the growth of government expenditures all over the world. This has attracted the attention of policy makers but also the academics. Consequently, the role of government expenditures in contributing to long run economic growth continues to be an important topic and the subject of much debate.

Government expenditures are resources spent to maintain the functioning of the state and of the government as well as promoting the wellbeing of the society and the economy as a whole. The inevitable reality of ‘living together’ resulted in the rise of ‘public’ and hence ‘public economy’ with the civilizational development throughout the history. It should, however, be noted that the expanding of government activities over time makes it increasingly difficult to distinguish which portion of government expenditure goes to the maintaining of the government itself and which portion is allocated for the benefit of the society and the economy more generally. Regardless of such a debate, the experience demonstrates in most of the countries in the world that the size of the government and more specifically the size of government expenditure is shown to follow an upward trend in the modern history of nation states, which unlike the empires of the past found legitimacy in delivering services to the general public for their social welfare alongside the classical functions of the state.

The ‘growth of the public sector’ or ‘government size’ or ‘increased government expenditures’ has received considerable attention for several decades. In particular, the relationship between public expenditure and national income such as GDP has been

tested empirically for various countries using both time-series and cross-sectional data sets within the context of 'Wagner's Law'. Thus, in the last few decades, considerable attention has focused on the growth of the size of the government sector, both in absolute terms and as a proportion of real gross domestic product or GDP. In practice, however, economists have been more concerned with the relationship between government expenditure and GDP.

The Kingdom of Saudi Arabia was established after the WWI as a nation state, and since the establishment of the state, the public sector or the state has traditionally been the generator and allocator of resources in Saudi Arabia and therefore it is the major employer and actively encouraged the development process. This has resulted in significant expansion of the public sector, where the public expenditure is spent on development plan projects, the administration of the country, in meeting the welfare needs of the society and the salaries or pensions of public sector employees. The Saudi Arabian social formation, hence, is very much defined as a rentier state in the sense that the state remains as the main generator of wealth and the distributor of this wealth, which is heavily generated from the oil revenues.

Saudi Arabia being oil rich country generated huge wealth from the exploitation of oil since 1950s. The oil shocks in 1970s and early 1980s in particular together with continuously rising production of oil, brought the Kingdom of Saudi Arabia vast amounts of oil money. "The Saudi economy is heavily dependent on oil with oil revenues making up around 96% of total export earnings and around 59% of the country's GDP" (Ministry of Economics and Planning, 2010).

The growing role of the private sector in particular since 1980s, however, is reducing the relationship between public expenditure and the growth of non-oil sectors. This partly can be explained with instability of public expenditures, especially during a decline in oil prices and hence recession in 1980s. Whilst it is easy to reduce capital expenditures without any political or social risk, Saudi Arabia sought to avoid reducing salaries or rationalising the level of public service due to the high political and social risks.

Because of the drop and fluctuating in oil prices there is uncertainty about the ability of the government to maintain its level of expenditure and economic policies. In fact most of the government growth witnessed in Saudi Arabia was a result of the government's expenditure from oil revenues. "In the 1970's and early 1980's oil revenues

accounted for about 95% of government expenditures, but lately its share in government expenditure declined to about 75%, also, increased from less than 8 billion SAR in 1970 to about 180 billion SAR in 1996” (Albatel, 2000). While the importance of oil revenues in financing of public expenditures has continued, the role of government in the economy in terms of share in GDP was 21.89% in 1968, which later increased to 56.92% in 1976. This trend continued, and in 1979 it was 49.46%. However, in 1980 it declined to its lowest level 43.31% since 1975 due to the global recession as a result of oil prices. Immediately, in 1981 the increasing trend in the share of government expenditures to GDP set in and reached to 51.70% in 1983. The declining trends in the ratio were observed from 1984 to 1989, falling to 43.37% in 1989 only with a pick in 1987 with 67.62%. Since then a decreasing trend observed in the ratio of government expenditures to GDP until the present times. Immediately after the war, the ratio fell down to about 47% and then followed a decreasing trend to 22.43% in 2010 (Ministry of Economy and Planning, 2010).

Sparingly, this study focuses on government expenditure and economic growth in Saudi Arabia during the period of 1968-2010. Since economic literature has already covered some case studies in this regard, this study aims to conduct an empirical analysis under the light of the existing body of knowledge by modelling government expenditure and economic growth in Saudi Arabia.

1.2. AIMS AND OBJECTIVES

The main aim of this research is to explore, examine and analyse the relationship between economic growth and government expenditure in Saudi Arabia for the period of 1968-2010. This study, hence, aims to investigate the impact of government expenditure growth on the performance of economy in the form of GDP growth in Saudi Arabia through modelling this observed relationship by employing econometric methods.

In fulfilling these aims, the following objectives are developed:

- (i) to render a critical survey of the relevant literature;
- (ii) to test whether Wagner’s Law with six functional forms or variants is held in the case of Saudi Arabia;

- (iii) to test if the Keynesian Relations, and the Peacock and Wiseman Hypothesis as potential models of government expenditure growth and economic growth can explain the experience of Saudi Arabia;
- (iv) to investigate the main factors, which are important in changing the relative amount of government expenditure in the long term; and lastly
- (v) to employ econometric time series modelling in the empirical analyses of the mentioned models.

The crucial question in this study is to find if there is a long-run relationship between economic growth and real government expenditure. The hypothesis to test in this study, hence, is:

Hypothesis I: There is a long-run causal relationship running from economic growth to real government expenditures in the case of Saudi Arabia as explained by Wagner's Law and Keynesian Relation;

Hypothesis II: There is a deviation from the trend in the development and growth of government expenditures due to some social and political events as explained by Displacement Effect;

Hypothesis III: There is a direct and long-run correlation between the government expenditure growth and economic growth in Saudi Arabia as conceived by the Keynesian Relationship with causality running from government expenditures to economic growth.

1.3. SIGNIFICANCE OF THE STUDY

There are a number of reasons as to why investigating the government expenditure growth in the case of Saudi Arabia is essential. First, there is a need to develop and analyse the relationship between government expenditure and economic growth in particular considering that the government expenditures have shown a secular and linear increase over the years with heavy public sector involvement in the economy. Therefore, re-evaluating this relationship with methods of empirical testing is particularly important to predict the new phase of the Saudi Arabian economic growth and determine the impact of government expenditure on the economic growth in the future.

Secondly, since such an analysis has not been attempted since 1983, exploring the impact of government expenditures on economic growth in Saudi Arabia is essential, as since then the Saudi economy has gone through dramatic changes towards a modern economy with increased role of private sector. However, it is still difficult to discuss about the independent or state-free private sector, as state still remains an important distributors of the resources in the economy. The recent disbursement and allocation of public funds for general social welfare and increased salaries is an indication of the continuation of a strong state in the Saudi Arabian economy.

It is, thus, important to discuss the economics and politics of public expenditure in a rentier state such as Saudi Arabia. While the economic rationale may not suggest an efficient use of public funds, the political economy nature of the country, being rentier, maintains and sustains the presence of government and its expenditures in the economy and society.

1.4. RESEARCH RATIONALE

The rationale for undertaking this study can be explained through a number of reasoning. First, it is a reality that the government expenditure has been increasing substantially over the years in Saudi Arabia and alludes to the expenses which the government incurs for its own maintenance and for the society as a whole. In supporting this statement, the data indicates that the government sector in Saudi Arabia is a major component of GDP, accounting for more than 45% of the country's GDP in 2010. Such a growing and hegemonic economic role of the government creates academic curiosity to study the subject matter.

It should also be mentioned that most government expenditure is financed through revenues from oil exports, accounting for almost 88% of total government revenues. Moreover, government expenditure has been increasing substantially over the past few years. It is seen as the engine of economic growth and considered the leading sector in the economy. Nevertheless, the growing government expenditure in recent years, along with the declining oil revenues in 1980s and 1990s has largely contributed to an accumulating national debt. However, in recent years, government managed to increase its surplus from the oil revenues due to the recent increases in oil prices (Ministry of Economy and Planning, 2010).

One of the main issues in the rationale for this study is the opportunity to recognize the fluctuations in oil revenues along with the large public debt. This has raised the question of the productivity of government expenditures relative to private spending, leading policy makers to call for an expansion of private sector at the expense of the public sector. One of the first methods to examine the efficiency of public expenditures is to measure its impact on economic growth as aimed at by this study.

However, the fluctuations in the oil prices in particular in the past created fiscal tension on the government. The increase in oil prices from 1970 to the early '80s and from 2005 to 2010 placed a huge burden on government expenditure to meet the upcoming projects and economic development in Saudi Arabia. Therefore, as a developing country, the Saudi government dramatically reduced the massive government expenditures in the 1980s and since that it is making great efforts for maintaining the growth rate of GDP. However, political economy nature of the country necessitates that the government must distribute its wealth to the larger part of the society for its political legitimacy, which implies the growing government expenditures. This has been the case in the recent months, and the distributive policies in the recent months created a very large burden on the treasury of the Kingdom.

1.5. MODELLING AND RESEARCH METHOD

There are three different theories explaining the government expenditure growth, which are utilised in this research:

- (i) Wagner's Law
- (ii) Keynesian Relations and
- (iii) The Displacement Effect Hypothesis

The relationship between government expenditure and economic growth in Saudi Arabia during 1968 to 2010 is, thus, explored and examined by using these three theoretical frameworks. Table 1.1, 1.2 and 1.3 summarised the six different functional forms of Wagner's Law, Keynesian Relations and Displacement Effect, which are used to model the relationship between government expenditures and real GDP and real non-oil GDP, respectively.

Table 1.1: Six Versions of Wagner's Law with real GDP / Non-Oil GDP

No	Function	Version	Year
Absolute Versions			
1	$L(GE) = \alpha + L \text{ (Oil GDP)}$	Peacock-Wiseman	1967
	$L(GE) = \alpha + L \text{ (Non-Oil GDP)}$		
2	$L(GEC) = \alpha + L \text{ (Oil GDP)}$	Pryor	1968
	$L(GEC) = \alpha + L \text{ (Non-Oil GDP)}$		
3	$L(GE) = \alpha + L(\text{Oil GDP} / P)$	Goffman	1968
	$L(GE) = \alpha + L(\text{Non-Oil GDP} / P)$		
4	$L(GE/P) = \alpha + L \text{ (Oil GDP} / P)$	Gupta & Michas	1967 & 1975
	$L(GE/P) = \alpha + L \text{ (Non-Oil GDP} / P)$		
Relative Versions			
5	$L(GE/\text{Oil GDP}) = \alpha + L \text{ (Oil GDP} / P)$	Musgrave	1969
	$L(GE/\text{Oil GDP}) = \alpha + L \text{ (Non-Oil GDP} / P)$		
6	$L(GE/\text{Oil GDP}) = \alpha + L \text{ (Oil GDP)}$	Mann	1980
	$L(GE/\text{Oil GDP}) = \alpha + L \text{ (Non-Oil GDP)}$		

Table 1.2: Three Versions of Keynesian Relations with Real GDP/ Non-Oil GDP

No	Function	Version	Year
1	$L(GDP) = \alpha + \beta L(GE)$	Peacock-Wiseman	1967
	$L(\text{Non-Oil GDP}) = \alpha + \beta L(GE)$		
2	$L(GDP/P) = \alpha + \beta L(GE)$	Goffman	1968
	$L(\text{Non-Oil GDP} / P) = \alpha + \beta L(GE)$		
3	$L(GDP/P) = \alpha + \beta L(GE / P)$	Gupta & Michas	1967 & 1975
	$L(\text{Non-Oil GDP} / P) = \alpha + \beta L(GE / P)$		

Table 1.3: The original Version of Peacock-Wiseman with Real GDP / Non-Oil GDP

Function	Version	Year
$L(GE) = \alpha + \beta L(GDP)$	Peacock-Wiseman	1967
$L(GE) = \alpha + \beta L(\text{Non-Oil GDP})$		

In testing all the identified theoretical frameworks and their various forms, time series modelling in econometrics is used through the following analyses:

- (i) Ordinary Least Square (OLS)
- (ii) Unit Root Test
- (iii) Co-integration;
- (iv) Granger Causality Test
- (v) Error Correction Models (ECM)

It should be mentioned that the main difficulty faced in this study is the fact that the models under consideration mainly developed for countries where there is a different political economy dynamic as compared to Saudi Arabia. For example, Saudi Arabia is a rich country with large wealth created by oil exportation, while these models are based on the experience of European countries which were and are considered mainly as manufacturing and industrial countries.

In sum, as a method, econometric time series analysis with secondary data utilised to explore and examine the relationship between government expenditures and economic growth.

As to the variable definition and data sources, the data used in this study on Saudi Arabia consist of the following variables:

- (i) Real Gross Domestic Product (GDP);
- (ii) Real Non-Oil Gross Domestic Product (Non-Oil GDP);
- (iii) Total Real Government Expenditure (GE);
- (iv) Total Real Government Expenditure on Final Consumption (GEC), it covers expenditures on goods and services;
- (v) Population (P)

The variables (GDP), (Non-Oil GDP), (GE), and (GEC), are all in real terms. In addition, the data examined is in per capita terms, and total real government expenditure used as ratios to GDP, which is required by some versions of Wagner's Law.

In empirically modelling this study, the following sources of secondary data were consulted:

- (i) International Financial Statistics produced by the World Bank (IFS);

- (ii) SAMA: Saudi Arabia Monetary Agency;
- (iii) The Ministry of Planning;
- (iv) International Monetary Fund (IMF)

1.6. OVERVIEW OF THE RESEARCH

This research contains ten chapters. Chapter One introduces the study, aims and objectives, the research problem and questions and also it presents a brief research methodology.

Chapter Two discusses financing economic development through state expenditures in late developing countries. In the first section it discusses the late developmentalism to explain the place of private capital and rationale for public expenditures. In the following section it discusses the use of government expenditure for economic growth.

Chapter Three provides a summary of the government growth theories and models. It presents economic rationale for a government, the theoretical explanations for the size and growth of governments and the related literatures starting with classical studies including Wagner's Law and some discussion about its validity. In addition, the Displacement Hypothesis and Keynesian Relation are explained. Furthermore, it explains the microeconomic models in explaining the growth of government including Baumol's Differential Productivity Growth and Bacon and Eltis Model. Moreover, the Public Choice Approach to the growth of government including bureaucracy, interest groups, median voter and redistributor's government model, voting bias and fiscal illusion is discussed as part of theoretical explanations provided for the explanation of growth of government. The chapter lastly presents the reinter state and government expansion.

Chapter Four aims to present issues related to the aspects of public sector measurement whereby the definition and measurement of the public sector or government expenditure is provided. In doing so, different conceptual definitions in explaining increase in government expenditures are provided. This is followed by an explanation of the remarkable complexity of the indicators used to measure of the size of the public sector.

Chapter Five presents the economic growth of Saudi Arabia and also the trends and developments in government expenditures. In doing so, various measure are utilised to present the case. The details of economic progress and growth in Saudi Arabia are presented with the relevant stages of development.

Chapter Six describes the modelling of government expenditure and economic development nexus for Saudi Arabia, along with the methodology that this study uses. Ordinary Least Square (OLS), Unit Root Test, a Co-integration, and Granger Causality Test and Error Correction Model are presented in this chapter to test for the validity of relevant models in the case of Saudi Arabia.

Chapter Seven presents the empirical analysis for Wagner's Law through the six versions of Wagner's Law with real GDP and real non-oil GDP. The empirical analysis was conducted according to the methods discussed in Chapter Six after each version of the Wagner's Law is presented in their functional forms.

Chapter Eight presents the empirical analysis for Keynesian Relations. After presenting a number of empirical results from the relevant theoretical and empirical literature on the relationship between government expenditure and economic growth, three versions of Keynesian Relations is presented. This is followed by the presentation of the data, and empirical analysis conducted through the use of methods mentioned in Chapter Six.

Chapter Nine presents the empirical modelling and analysis for Displacement Effect. It first presents the empirical results of the relevant theoretical and empirical literature on the relationship between government expenditure and economic growth through Peacock and Wiseman's Hypothesis. It also investigates the data and empirical results and analysis by using the defined empirical methods. In addition, presents the results of analysis presented.

Chapter Ten concludes the study by summarising the empirical findings, comparing the results for real GDP and real non-oil GDP. The final section of the chapter discusses some of the implications that might apply to the Saudi Arabian economy, to identify the proper economic policy that would be appropriate for Saudi Arabia in managing their economic growth and government expenditure.

CHAPTER 2

FINANCING ECONOMIC DEVELOPMENT THROUGH STATE EXPENDITURES IN LATE DEVELOPING COUNTRIES

2.1. INTRODUCTION

Development is the primary tool to address human suffering and requires cultural change which deals with all sectors of society in dealing with the causes of poverty and in the provision of social and health care. In the late twentieth century, development was an important global concept, closely examined in multiple dimensions and levels, and seen as interconnected with many other economic concepts such as planning, production and progress. However, concepts of development vary according to the final objectives pursued such as increasing the national income over a set period. This includes trying to identify the changes caused by economic variables such as income, production, consumption, and capital formation. Means of augmentation grow and result in automatic growth, defined as that which occurs without government intervention or representatives in programmes and economic plans.

The most important aims of economic growth and development are to reduce unemployment and improve citizens' well-being and hopes for a decent life in terms of standards of health and education as well as social progress that allows them to contribute to the economy and general progress of their nation's increasing prosperity. Thus, economic growth and development is a comprehensive strategy aiming to change the economy and society as well as the lives of individuals living in that particular society. However, an important part of such a strategy is the financing economic growth and development; which has remained an important question in developing countries since their independence (Buffie, 1984). As late development countries, shortage of capital was initially an important bottleneck for economic development; and hence the search for financial sources for economic growth and development constituted an important dilemma for developing countries.

It should be noted that the studies investigating the relationship between economic growth and finance can be classified into three: The first involves a positive relationship between finance and economic growth. The second recognizes financing as an extremely significant element in the development process. The third trend finds a negative relationship between finance and economic growth (Van Wijnbergen, 1983; Buffie, 1984).

This chapter focuses on late developmentalism as a concept and policy source to explain the weaving of private capital and rationale for public expenditures, which is extended by

discussing the uses of government expenditures for economic growth. This chapter also provides critical approaches to the issues in question. The conclusion draws this chapter to an end.

2.2. LATE DEVELOPMENTALISM

2.2.1. Concept

Developmentalism approaches aims to provide a comprehensive understanding of the change in societies by defining development through socio-economic and human well-being related variables beyond economic growth. It is not only an economic concept, hence, but also takes into consideration principles of various theoretical approaches and ideologies of development as a key strategy towards gaining economic prosperity. This is complemented by analysing development concepts through the international economy but also through political institutions with the objective of putting economic development in a political context, as politics and policy making determines the nature of economic development.

The theory of development assumes that the phases of development must be compatible with the system of each country and move in a balanced manner from one stage to another. The map of international economies shows the huge changes that have taken place in the international system in both geo-political and geo-economic conditions as a result of pressing need for change through different dimensions.

Concepts of development vary depending on the final objectives pursued by doubling national income over a certain period, including trying to explain the changes caused by the same economic variables such as income, production, consumption, and capital formation. However, since 1970s, the understanding of economic development changed to define it beyond economic growth as it is recognised that economic development is a multidisciplinary and also a larger concept compared to economic growth. Building infrastructure in the context of underdevelopment requires measurement of productive forces and understanding the relations and conditions of production, but at the same time change in the socio-economic and human conditions are essential. The features of developmentalism include:

- (i) Late development of the forces of production, in particular, the essential element of 'rights' which finds expression in the unequal relationship between people and the natural environment in which people live.
- (ii) Late emergence of an integrated and supportive cultural infrastructure. This leads to the considerable differences in rates of literacy among developing countries as compared to developed countries.

The differences between the countries do not provide an accurate picture of the development process, and their measurement is similarly. However, economic problems facing any society are confined to reconciling the needs of a community and resources available to it.

Rostow (1960) states that underdeveloped countries would go through the same process and stages of economic development until they reach the level of a mature society with rising consumption but also level of social development. This implies that capitalism is the highest stage of development that societies aim to reach as in industrialised democratic countries.

While developmentalism remains an important policy of developing countries, how to finance economic development is an important issue. Considering that these are late developmentalist states, lack of private capital in these countries resulted in finding other means of financing economic development, which are the issues discussed in the following sections.

2.2.2. Lack of Private Capital

The development of a private sector is a key requirement for the progress of a society. However, less developed nations failed to give this the necessary attention and so contributed to their economic underdevelopment. This section will consider the concept of the private sector and development, and also discusses the obstacles faced by the states.

The private sector is considered as the main aspects of the national economy which normally provides the resources for economic growth, and such resources are utilised by the governments to achieve economic development. This is a strategy based on the development and industrialisation of the western world, and therefore as a linear modernisation, the late developmentalist countries are also expected to go through the same stages as identified by Rostow (1960). Thus, private capital is considered as the main locomotive of economic growth and development. For late developmentalist countries, the lack of private sector and hence private capital was an issue, and therefore heavy estates as a result opted as a solution in these countries, which necessitated heavy involvement of state in economic expansion in late developing countries. In most of the developing countries, until the privatisation policies since 1990s, state played major role in the economy. While the state involvement perceived as a solution in the initial period after independence of these countries, by 1980s the state became an obstacle for the economic development in these countries, and hence the Washington Consensus in early 1980s to provide structural change through economic reform and liberalisation aiming to strength the private sector.

In the case of the Saudi economy, as a late developmentalist country, state has been the main economic actor generating and distributing wealth of the country. The oil wealth in the

country resulted in state's heavy involvement in the economy, as the Saudi society did not have any infrastructure and a viable economy when it gained independence. However, due to the need for economic diversification, the private sector has begun to grow in recent years. As an indication, non-oil sector grew by 9% from 2005 to 2009 to become the main engine of expansion for the Saudi economy parallel with government expenditure (Ministry of Economic and Planning, 2009).

The development of private sector has become important in particular with Saudi Arabia's accession to the WTO in recent years, which conditions the expansion of the private sector. As a result of the expansion of the private sector, the amount of foreign direct investment in the Kingdom has doubled to reach 5.6 billion dollars (IMF, 2008).

The Kingdom's membership in the WTO did not have any sudden adverse impact on agency agreements and the commercial sector, and this was a supporting factor in the economic reform program adapted by Saudi Arabia. The private sector is the most important sector to develop the economy in Saudi Arabia despite the deferred interest and the existence of some restrictions.

The private sector's role in increasing productivity and investment and the provision of employment would have been possible due to economic diversification and the WTO accession. Over the past decade in Saudi Arabia, the government adopted several policies that would strengthen the role of private sector in the economy. While development still requires continued change to achieve higher rates of economic growth, expansion in private-sector investment is of crucial importance for the development process. The Kingdom has strong economic and physical infrastructures as well as a large domestic market, relevant institutions and modern concepts of development management structures.

It should be noted that Saudi Arabian state has enormous resources for economic growth and development and therefore heavily involved in the economy of the country. However, such an expansion has resulted in inefficiency and ineffectiveness and also over waste in the economy. Thus, there is an urgent need for the economic diversification and private sector development in the country.

2.2.3. Rationale for Public Expenditure

The lack of private sector and the private capital in the independence period of new states resulted in governments assuming the role of private sector to raise the necessary funding for economic growth and development. Thus, the second half of the 20th century is marked with heavy involvement of state in the economy.

One of the most important economic phenomena, attracting the attention of economists, is the phenomenon that any increase in public expenditure results in increases to national income. Thus, the phenomenon of greater public expenditure increasing national income is generally recognised phenomenon in all countries, no matter the economic system or level of economic advancement.

The first to scrutinise the nexus between government's involvement in the economy and economic growth is the German economist, Wagner (1883:8), who stated that "There is a proportion between public expenditure and national income which may not be permanently overstepped." In other words, after he studied the related overheads and increases, he found that there is a direct correlation between increases in economic activities of the state and economic development. Moreover, it has been noted that the phenomenon of increasing public expenditure might be due to other reasons, real and virtual, with the following being the most important (Bailey, 2002:44)

- (i) Economic reasons resulting from the increased role of the state in economic activity to achieve overall balance of the national economy, which requires increased financial resources, which means an increase in the volume of public expenditure.
- (ii) Political reasons have been linked to the political role of the state and political changes, which all necessarily lead to increased public expenditure.
- (iii) Social reasons have been associated with an increased state role in social activity and equitable distribution of income.
- (iv) Military reasons and security needs necessitates increases in public expenditure.
- (v) Administrative reasons involving large businesses run by the state require the presence of government employees to work in the state's administrative structure, as well as development, modernization and training, leading to increases in public expenditure, and greater government work as well as the accompanying increased expenditure.

The state, thus, actively involved in economic and social construction and structuring of the society as a later developmentalist society as a general pattern in the post-colonial and independence period.

2.3. UTILISATION OF GOVERNMENT EXPENDITURE FOR ECONOMIC GROWTH

There are many different opinions about the impact of government expenditure on economic growth. Some have argued that government expenditure in all the various subdivisions has a major impact, while another view is that there is a limited impact on some of them (Gupta and Verhoeven, 2001).

Government expenditure, whose effects are often evident in promoting economic growth, is an important tool to affect the economy. Government investments are initially considered to contribute to the accumulation of capital, as well as contributing to meeting the needs of a market economy but also aimed at generating the necessary funding for social development of the society.

In terms of government expenditure having impact on the economy, functionally government expenditures can be classified in the following manner, consumer expenditure, investment expenditure; transfer expenditure.

As regards to the consumer expenditure is to be taken first. Consumption is the main component of gross national product (GNP). It features on both sides of the equation of income and expenditure when measuring the GNP. From this standpoint, the consumption per capita (expenditure) is considered an income to another individual. Consumption depends heavily on several factors, most notably income, and income is divided into consumption and savings. Regarding the proportion of saving and consumption from society to society, some communities tend to be more consumption-oriented and some communities are better known for their high percentage of savings. We cannot ignore the fact that consumption is important in economic growth, as rising consumption, especially for durable goods encourages production, which in turn encourages increased employment and creates new businesses (Barro, 1991).

Savings further encourage investment. During economic boom years, both jobs increase the size of expenditure for different types of consumption and investment increase. As a consequence the value of the gross domestic product (GDP) grows. There are periods of prosperity followed by periods of stagnation. In economic cycles periods of economic recession are the slowing of the rate of growth of both consumer expenditure and investment expenditure. Furthermore, there is an accompanying lack of development of alternative opportunities, leading to increased unemployment; financial crises may lead to the loss of banks, loss of capital markets and loss of the market's ability to perform its role successfully. This may lead to lower profits and faltering stock prices, besides lower levels of real gross domestic production than normal.

It is important to distinguish between savings and investment according to the factors affecting both of them. This is crucial and important for economic analysts, some of whom believe that investment has the more important role in economic growth and is the most prone to volatility due to changes in expectations of investors and the multiplicity of factors that could affect these expectations. Expenditure of wealth varies with the individual according to such factors as age, marital status, expected changes in prices, future income, and customs and traditions prevailing in the society.

Economists view income as more important than other factors. Functional studies have shown that the size of consumer expenditure is directly proportional to the size of the ideal income when other factors remain the same. There are also the differences among individuals in terms of their commitment and their involvement in social practices and traditions such as imitation and simulation. It has also been observed that increases in the rate of government expenditure usually reflect increases in salaries and bonuses for staff and increases in public services such as building and operating costs of new schools and hospitals. Thus, increased income has many effects including an increase in the rate of personal income, increase in state income and budget and this increase is usually inflationary because it does not reflect a real increase in gross domestic product (GDP).

As for increasing the overall budget deficit, governments borrow from abroad or from the private sector to cover their deficits. In both cases, the state must bear the burden of repayment of these loans. Increases in government expenditure have a bad effect on the economy, although governments often resort to this solution in times of economic recession to reduce the rate of unemployment and encourage private-sector investment.

The behaviour of consumer expenditure tends to be based on habit. Once individuals become accustomed to a certain standard of living, they will try to maintain this level despite any drop in income. Economists are of the opinion that such behaviour is irrational.

This vision confirms the nature and simulation of consumer expenditure of family income. Certain segments of a population will often spend more on consumption in this way if they are of middle-range income or lower (Barro, 1991). This trend towards expenditure more in the middle-range income bracket results in part from pressure on the family to conform to the society in which they live. It is the result of the larger family noticing in their life what is normal for them, and other families will tend to continue to spend on certain goods, maintaining a family habit.

On the other hand, together with the time series analysis, this has been used to clarify cyclical movements in the average propensity to consume, whereby subjects seek to maintain a level of consumer expenditure despite the fluctuations in income.

The level of consumption is not only current income as pointed out by Keynes (1936), but also the greatest level of income reached in the past. Some researchers believe that consumer expenditure has a strong negative impact on government expenditure and thus on governments' moves to influence economic growth (Barro, 1991).

Secondly, investment expenditure is the total expenditure by corporations, whether governmental or private for the acquisition of assets, equipment and tools for the goal of increasing production. Therefore, it can be said that an increase in investments is a healthy and positive phenomenon. The reason for this is that increased investment leads to an increase in the GDP, which in turn leads to an increase in the proportion of employed persons and therefore an increase in income for individuals.

It is not difficult to recognise that increased investment is "a key element in the growth of the national economy in any country, and that it can be considered as one of its important beneficial factors" (Aschauer, 2000:391; Barro, 1991:407).

It is also important to examine extremes in positives and negatives of economic growth, the advantages and disadvantages. Researchers like Aschauer (2000) demonstrated that public funds might have a positive impact on growth if the growth equation has been controlled for effectiveness and public financing. In addition, Galor and Moav (2004) suggested that the main cause of economic growth varies at different stages of a country's development.

In public finance the most famous early theory is Wagner's law (1883) of expanding state activity. This "law" reflects the importance of government activity and expenditure as an inevitable feature of a progressive state (Bird, 1971). According to Al-Hakami (2002:1), "Wagner's law states that government expenditure tends to rise as gross domestic product increases because of":

- (i) Expansion of "protective and administrative government functions";
- (ii) Expansion of "government activities pertaining to education and culture", and
- (iii) The increasing "tendency toward monopoly because of technological progress and increasing returns to scale which need to be offset by government action."

Government expenditure has a direct impact on the operations of capital formation, production and income, consumption and savings, as well as the distribution pattern of investments. This as well as proved by experiments that the rate of economic growth in the developing but also depends to a large extent on the ability of the state government expenditure

on different sectors, which depend on the ability of these sectors to increase domestic production and thus the national production and diversification of the production, which allows the development of the state's ability on capital accumulation and the payment of the growth rate to a remarkable level.

According to, Odedekun (1999) there is a positive relationship to spend on infrastructure and other public expenditure on investment growth in the long term.

Lastly, governments undertake large transfer expenditure with the objective of redistribution of national income in different forms such as education, health, public investment, social security and social benefits. In addition, transfer expenditures can also include all expenses paid by the government in the form of subsidies to individuals in different forms. These take three forms:

- (i) Social Benefits: for those who pay for a certain category of members of the community to improve their social and their access to a certain standard of living. This category includes widows, the disabled and the unemployed.
- (ii) Economic Subsidies provided by the State to sectors and enterprises with a view to reducing prices and/or increasing production of some commodities:
 - (a) to provide interest-free loans to some sectors;
 - (b) to provide direct or indirect cash subsidies;
 - (c) to provide benefits in kind such as providing the land needed for a project free of charge or for a nominal fee.
- (iii) Subsidies and Foreign Aid includes subsidies in the form of grants provided from one country to another in cash or in kind. Also included are interest-free loans provided by the state to another for political or humanitarian purposes.

All these three categories of government expenditures have different level of impact on the economy; and therefore governments use these expenditures categories as part of its fiscal policy.

2.4. IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH IN SHORT AND LONG-RUN

The government expenditures through each of its categories have different impact on economic growth. Prest (1985:7-8) commented that “expenditures may differ in their outcome in the long run since some expenditures are expected to yield income in the longer run, like education and public works, and others will not yield any additional income in the long run, like defence”.

As regards to the short-term economic growth, economic growth has been biased by an increase in Aggregate Demand (AD) in the short-run and has been measured by the change in real GDP. The main reasons for an increase in AD are as follows:

- (i) Reduction of interest rates, which reduces the cost of borrowing, and thus, encourages spending and investment.
- (ii) Increased real wages, increasing disposable income, and encouraging consumer spending.
- (iii) Increased government spending on development projects.

Crouch (1972) presents that the increase in AD only results in real GDP growth in the short term. He notes that Long Run Aggregate Supply (LRAS) is inelastic; therefore higher Aggregate Demand (AD) only causes inflation.

The long-term economic growth is biased by an increase in LRAS and AD. The main reasons for an increase in the LRAS are as follows:

- (i) New raw material;
- (ii) Increases in investment;
- (iii) Increases in government spending on development projects;
- (iv) Increases in labour productivity.

It is common knowledge that fiscal policies cannot bring about changes in long-run growth of output in a neoclassical growth model. The introduction of endogenous growth models that incorporate the government sector have led to the opposite conclusion; that fiscal policies can affect the long-run growth rate of an economy (*e.g.* Barro and Sala-i-Martin, 1995:539).

Over the "course of a business cycle, a rise in the budget deficit (that is, the ratio of budget deficits to output) increases the growth rate of output and employment. By increasing effective demand, the rise in the budget deficit increases potential business profits, thereby stimulating investment expenditure by firms. If planned investment is greater than firms' available savings, firms borrow from banks. However, the injection of bank credit also leads to

the accumulation of financial charges that eventually slow down the expansion". The positive effect of the budget deficit can be augmented by expansionary monetary policies that maintain low interest rates, which would have the dual effect of providing greater monetary stimulus from the deficit and keeping financial charges on business debt low" (Moudud, 1999:2-3). These results accord well with the proposition that monetary policy should be designed to stimulate growth and employment (Papadimitriou and Wray, 1994) rather than targeting inflation.

Moreover, even if productive capacity is fully utilised in the long run, government expenditure may still have a positive role to play. "Specifically, increased government expenditure, even deficit expenditure, may not lead to lower growth; indeed, under certain plausible policy regimes the long-run growth rate may even rise". This can occur if government expenditure increases either the long-run rate of profit or the social saving rate (the combined government, business, and household saving rate). "One means of raising the social saving rate is to increase business retained earnings, which might be accomplished through policies such as investment tax credits, lower corporate tax rates, and accelerated deductions for capital depreciation" (Fazzari, 1993). Combined with appropriate taxes on capital gains and 'luxury' consumption, these policies could produce enough of an increase in the total social saving rate to allow a fixed or modestly rising budget deficit. The consequence of this would be an increase in the long-run growth rate.

Government expenditure can be divided into two types:

1. Consumption expenditure (expenditures on goods and services) and
2. Public investment expenditure (expenditures on infrastructure, education, public health, research and development, and other expenditures that are conducive to raising business productivity).

A number of empirical studies have found that a rise in public investment significantly reduces business costs and improves business profitability, thereby raising the long-run growth rate. An increase in the growth rate is also obtained by raising the share of investment expenditure relative to consumption expenditure while keeping the budget deficit constant.

2.5. CRITICAL APPROACH TO GOVERNMENT EXPENDITURES

In the case of financing for development issues, despite the frequent criticism of various funding policies for development in developing countries, shortcomings must be addressed and criticism of government spending is important in advancing development and helping the government to be the proper steward of public funding.

Government expenditure is widely seen as having an important role in supporting economic growth. This section aims to identify the factors determining government expenditure efficiency and inefficiency. As discussed above, most studies did not initially find a robust relationship between government expenditure and growth.

It should be noted that governments have also introduced performance measurement at the organizational and individual levels to ensure that programmes and activities are implemented efficiently and effectively with set objectives.

It is therefore important to question whether economic policies reflect the actions and measures taken to achieve those objectives in light of the availability of human and financial resources.

The problem of economic development facing the developing countries was itself imposed itself through evolution from traditional concepts to the concept of sustainable development. However, if sustainable development is itself considered an obstacle that occupies the majority of the attention of the researcher's government (those that have reached an advanced stage of well-being in the methods of providing for future generations) then the situation is different to the developing countries which are still trying, with extreme difficulty, to meet the minimum necessities of life. It therefore remains important to identify the most efficient and effective method to address the problem and to achieve the goals according to the nature of the economic situation caused by each of the issues posed in the past and still posed today.

Lucas (1988:20-42) argues that "public investment in education increases the level of human capital, and that this can be seen as a main source of long-run economic growth." Moreover, Barro (1990:111-125) mentions the importance of government expenditure in public infrastructure for economic growth and Romer (1990:70-102) stresses the relevance of research and development expenditure. "Therefore, the composition of public spending is also a relevant issue, and if the aim is to promote growth then the focus should be put on the more productive items in the budget, even if the balance between the various functional items of the budget varies according to the particular circumstances and priorities of each country".

In one of the seminal contributions to endogenous growth theory, Barro (1990:103-125) placed "fiscal policy in the central position". In providing microeconomic rationale, Romer (1990:70-77) stressed the importance of "externalities to argue that the government has an important role to play in the growth process".

Additionally, Kneller *et al.* (1999:170-191) explained these counterintuitive results as "a failure to account for distortionary taxes. They argued that a complementary explanation is a

failure to account for inefficiency. This claim was supported by a simple endogenous growth model that explicitly considers the role of inefficiency. Particularly for developing countries, it is very likely that inefficiency plays an even more important role than distortionary taxation due to the income structure in these countries and the systematic occurrence of substantial inefficiencies".

In both developed and developing countries, privatization and, in some cases, commercialization have grown in popularity and acceptability. They have also become important instruments that governments can use to promote economic development, improve the production and distribution of goods and services, streamline government structures, and reinvigorate industries controlled or managed by the state.

Over recent decades, privatization policies have been implemented all over the world (Bortolotti and Siniscalco, 2004) and the economic literature "devoted to privatization has been constantly increasing. The theoretical literature dealing with the relationship between privatization and efficiency has also grown over the last twenty years, but the theoretical results are ambivalent about the impact of ownership changes on efficiency". Although this literature has been regularly reviewed in empirical studies devoted to privatization policies, to the best of our knowledge there has been no survey of economic literature focusing exclusively on theoretical studies. Such studies could be useful in assessing the pure effect of ownership changes and would show a gradual shift from a normative to a positive analysis as the focus of attention moves from the theory of incentives with incomplete information to political economy issues. "The latter are obviously at the core of privatization decisions but have only recently been analysed by the theoretical literature."

Likewise, the most serious allocation inefficiencies reflect the failure of the state to provide a mix of goods and services consistent with any reasonable social welfare function.

2.6. CONCLUSION

In this chapter, the financing of development and its importance in developing countries and its effect on the development process is discussed. It should be concluded that development is inevitable for the human well-being, an essential requirement in all countries in the world. But its importance is growing in developing countries as countries seek to improve the living standards of their residents through improved economic resource utilisation. Prest (1985) argued that a prerequisite to the development process has been to locate, support and facilitate all economic sectors in the country.

The economy must find and create the necessary conditions for growth, which depends on many different ingredients, including foreign direct investment. States need to choose how best to use those resources in order to achieve efficient use of factors of production in production processes and thus raise the rate of economic development.

In any case, economic development is a goal of all governments throughout the world. Over the past 25 years, it has become increasingly important to be an aggressive player in the economically restructuring global economy of the 21st century. Rapid changes have shocked the world. Globalization has left a gap in revenue streams. The transition from a manufacturing economy to a service economy has created an unstable economic climate desperately trying to create jobs and generate revenue, that this transition has taken place principally in post-industrial societies.

Finally, with respect to proposals and recommendations relating to policy, the following points can be considered an outline of the way in which the wheels of the economy may begin to roll. They are:

- (i) Increased investment for public and private sectors, as the economy can experiment with public and private investment complementarily. In this case, measures should be undertaken to promote private investment to reduce risks and provide assurances for the public sector, and to increase revenue by expanding the market.
- (ii) Adopting a gradual approach to selective trade integration processes of unprecedented measures in order to penetrate the global economy.
- (iii) Controlling volatility by coordinating functions of the actual macroeconomic framework and by the consolidation of monetary stability to sustain growth in investment.
- (iv) Governments in developing countries should emphasize investment in research and development activities in human capital. The criterion should be efficiency of public

investment measured by the degree of economic progress made because of the increased revenue factors in knowledge-based economies.

- (v) Economic policies should be directed towards providing the necessary guarantees for the stability and encouragement of investment.

In addition, criticism of development processes in developing countries, however powerful, should not slow down the development process. It must be constructive, directed to government expenditure supporting development projects, and should not diminish the role of the private sector, which is the current key to the leadership of many government projects through privatisation.

Economic development is a process through which state in interactions with national private sectors achieve better economic growth and qualitatively higher levels of community life, which remains an important policy issue still. Thus, in the late developmentalist states, such as Saudi Arabia, there is still role for state to play in terms of creating the much-needed initial capital in the economy for economic development. However, efficiency of such involvement in the economy remains an important issue.

CHAPTER 3

GOVERNMENT GROWTH: SURVEYING THEORIES AND MODELS

3.1. INTRODUCTION

The growth of government and its impact on economic performance has been an important subject area within economics and political economy studies. Over the decades, a number of approaches, theories and models have been developed to explain the determinants of government growth but also measure the impact of government growth on economic growth and development. Since Wagner's Law of 'expanding state activity', a number of macro and micro-economic models have been developed to understand the relationship in question.

In particular, in late developmentalist state, the economic role of the state and the role of the state in the economy have been crucial due to the lack of private capital for economic growth. Therefore, compared to industrial countries where the role of the state moved to welfare oriented concerns, in the developmentalist states the state remains an important part of the economy despite the concerns over efficiency of the state's economic involvement in the economy. For this, since 1979 Washington consensus, economies in the late developing countries are liberalising and, hence, privatising the state economic enterprises to reduce the role of the state in the economy.

The purpose of this chapter, hence, is to review the literature concerning economic rationale for government but also aims to present the theoretical explanations and model to explain the growth of government. A particular attention is given to the empirical studies aiming to locate the relationship between government expenditures and economic growth. A number of studies have been selected and provide observations on such growth.

The rest of the chapter is organised as follows: section one, presents government growth and related literatures by starting with classical studies and relevant theories. Following section, presents Wagner's Law, the Displacement Hypothesis, and later theoretical explanations such as Keynesian relationship. Section three, considers the microeconomic models such as, Baumol's differential of productivity growth, Bacon, and the Eltis Model. Moreover, the Public Choice approach to the growth of government studies is reviewed including 'bureaucracy and growth of government', 'interest groups and growth of government', 'median voter and redistributors' government model', and 'voting bias and fiscal illusion'. The following section reviews the literature related to 'rentier state and government expansion' to contextualise the case for Saudi

Arabia which is a 'rentier state' generating the wealth through oil and distributing to the larger population. Section four presents the combined model; while section five provides the empirical studies on the subject matter.

3.2. THE PERCEPTION OF GOVERNMENT (STATE) OVER TIME

Government has grown in all countries over the decades with the development of nation states. However, growth in public expenditure has not been symmetrical across nations. Depending on the economic growth level of nations, government's role in economy and society has shown differences. A quick observation therefore shows a ray of government involvement in the economy: a very heavy state involvement in the economy to very liberal economies. While economic necessities are used to justify this, there are political reasons determining the role of the state in the economy as well.

In an attempt to explain the state's role in the economy, Musgrave (1996: 250-257) considers the relations between fiscal theory and the theory of government as it emerged from the 18th century to date and he concludes that this relationship is observed through four different patterns". First, there is a classical view of the service state, needed to adjust for externality-based market failure, and to approximate a market solution. Second, there is a welfare state, designed to correct the market-determined state of distribution, based on what society views a fair or optimal pattern. Next is the communal model, where individuals recognize communal as well as private concerns. Finally, the flawed state, where action of governmental agents shifts attention from market to policy failure. While this indicates the changing political economy over the development of economies in nation states, it also indicates changing economic nature and role of the state in different phases of economic and political development in nation states.

An important aspect of growth of government is, however, related to the economic development needs of developmentalist societies. In a very euro-centric manner, the post-war development of industrial states were taken as example in developing policies for the underdevelopment countries through linear development model indicating that state played an important role in the development process in Europe, which can be replicated in the developing nations. It is therefore suggested that state in general accelerated economic development by providing safety for increasing investment and optimal direction for growth and development by also providing the necessary initial capital.

While classical economists aimed to limit the role of the state in the economy, the failure of market through the beginning of the 20th century has brought the state back into the

economic life beyond taxation. The Great Depression in 1929 and the collapse of the economy in those years paved the way for the state's further involvement in the economy. The Keynesian solution to the problem increased the role of the state in economy with the objective of expanding the aggregate demand in the economy through fiscal policies to overcome the stagnation in the economy. Keynes, therefore, suggested that the government should intervene in the national economy to influence the overall course of spending to provide full employment, otherwise there is recession and conditions deteriorate. This trend has led to a widening of the scope of government action and activity throughout the government to guide all areas of economic activity and provide for social justice in providing essential services to citizens for their well-being and prosperity in various dimensions of their existence (Keynes, 1936).

To overcome the political and economic legacy of the grown government in the face of inefficiency of the government involvement in the economy, in 1979 international agencies urged the developing states to restructure their economies and liberalise their economic and financial system as proposed as a policy under Washington Consensus. Since then about all the states in the world involved in economic restructuring by privatising their economies, which includes Saudi Arabia as well. While it is expected that this should result in reduced size of government, the nature of government involvement however in regulating the economic and financial sectors as well as social sector has been the new areas of the increased role of the state.

Lastly, since the financial crisis in 2008, a number of governments in the world in particular in industrialised G-8 countries involved in bailing-out and transferring the ownership of the failing financial institutions to the public sector. While this should not be considered as a policy change, the real life consequences of such policies indicate the increased role of government in the economy.

3.3. THE ECONOMIC RATIONALE FOR GOVERNMENT

The economic rationale for government can be understood in terms of the degree to which government intervention improves efficiency. Importantly, however, initial stages in economic growth and development process necessitated the public-sector investment as high priority. In the later stages of economic growth and development, the government then continues to supply investment but in such a stage public financing is considered as complementary to growth in private investment.

The debate on the role of the state in the economy can be traced back to Smith (1776) in *The Wealth of Nations* and Mill (1848) in *Principles of Political Economy*. Both Smith and Mill intended

to explain the principles by which revenue and expenditure policies could be determined as part of their wider investigation of the relationship between the government and the economy.

In Smith's (1776) argument the role of the government is confined to three main duties. These are protecting the country from foreign aggressors; maintaining law and order, and providing and producing goods that could not otherwise be produced by the private sector, which was built on the basic theorems of welfare economics.

While the classical notion of limited role of the state could be possible until the emergence of nation states, since mid-19th century the role of the state in the economy has increased through various forms beyond expenditure and taxation. In particular with the realisation of market failure and economic crisis in the beginning of the 20th century provided the policy rationale for the increased role of the state in the economy with the objective of correction the observed failure. On the other hand, the rise of neo-classical school of thought in responding to the changing nature of the economy provided the theoretical and intellectual rationale for the increased role of the state in the economy, which is discussed in detail in the following sections.

3.3.1 Market Failure

Market failure refers to the deviation of market operation from the first best solution and hence is marked with inefficient allocation of goods and services by a free market. "That is, there exists another conceivable outcome where a market participant may be made better-off without making someone else worse-off. Market failures can be viewed as scenarios where individuals' pursuit of pure self-interest leads to results that are not efficient – that can be improved upon from the societal point-of-view" (Stiglitz, 2000:4-5).

Smith's theory of laissez-faire, with the underlying premises that markets allocate resources efficiently, leading to social welfare maximization by markets got wider acceptance among developed countries' policy-makers and academicians in the centuries since he published *The Wealth of Nations*. The roles of the government in many of the Western European countries have been shaped by this philosophy. However, the realities of the market conditions and failures in the economy and market resulted in the recognition that Smithian perfect market conditions are not valid; as the realities indicates the impossibility of the first best choice due to the certain prevailing conditions in the economy marked as market failures. Market failures are used by the neo-classical school to provide rationale for the state intervention, which are discussed in the following sections:

3.3.1.1. Public Goods

Public goods have been defined by Samuelson (1954: 387) as those "which all enjoy in common in a sense that each individual's consumption of such a good leads to no subtraction from any other individual's consumption of that good. Therefore, by definition, public goods either will not be supplied by the market or if supplied, are supplied in insufficient quantity. They have two definitive properties". First, it costs nothing for an additional individual to enjoy their benefits. Second, it is difficult to exclude individuals from the enjoyment of public goods. Thus, it is not possible to price public goods in the market.

Samuelson (1954) argued that markets would fail to provide public goods because they are non-excludable. However, that means it is not possible to prevent the use of the service by those who do not pay for it, and it is nontrivial in consumption to the extent that one person's consumption of the commodity does not affect any other person's consumption of it. However, other users can cause congestion when using the goods and other facilities may be required. It adds up to the government establishing effective amount of such goods provided according to population size. The fact that private markets will not supply public goods provides a rationale for various government activities, which includes free education, health and other welfare services. In addition, some of the public goods perceived as merit goods, consumption of which are encouraged due to social benefit it creates. Since the consumption of such goods also cannot be left for the market, state is considered to provide such goods as well for the larger social welfare.

3.3.1.2 Externalities

The private sector sells many commodities that affect people other than the purchasers. Thus, in addition to private costs and benefits, there are social costs and benefits, which are called 'externalities'. Externalities, hence, can lead to inefficient decisions even if perfect competition exists as the social costs and benefits are not considered in production and pricing decision.

Instances where one individual's actions impose a cost on another have been referred to as negative externalities. An example is that without government intervention of some kind, the level of pollution would be too high (Stiglitz, 2000). In addition, not all externalities are negative. There are some important instances of positive externalities, where one individual's actions confer a benefit upon others.

It has been, thus, argued that the economic action of a rational person may result in a positive or a negative effect on a person or firm who does not part take in the economic activity

and does not pay for the activity to occur. The positive effect is known as positive externality and the negative one as negative externality.

If we let markets decide resource allocation in the presence of externalities, the amount of output produced by an individual firm appears to be higher than the socially desired amount in the case of negative externalities but lower in the case of positive externalities. This creates a conflict with the principle of a Pareto-efficient resources allocation. The correcting mechanism is either to reward or to penalize those who produce positive or negative externalities respectively. This could be done by an institution which we call government.

Challenging this argument, Coase (1960) argued that, without government involvement, optimal resource allocation is quite possible by assigning property rights. In supporting this, Inman (1978: 687) presents his argument, as in the case of two agents linked to each other through an external activity in a world of complete information and costless bargaining, the two agents will strike mutually advantageous bargains for the level of the external activity. However, considering the non-existence of perfect market, such an arrangement would not be possible, and therefore government intervention is expected to correct such a failure.

3.3.1.3 Imperfect Market

The classical economic theory argues that Pareto-optimal resource allocation may be achieved when price determined according to marginal cost at zero economic profit (Stiglitz, 2000). Zero economic profit eventually means that the average cost of production is equal to the price. However, being the condition of the perfect market this may not hold when there is oligopoly and monopoly markets or increasing returns to scale. In addition, market failure also appears when there are few sellers or one seller in the market, or in the case when the price of a good is greater than its marginal cost in which case the optimal level of production is less than the socially desired one (Bailey, 2002).

In order to overcome such imperfect market conditions, government can apply many systems to correct this market failure. While in the case of an increasing returns scale, government intervention in the production of goods and services was justified for long periods because of this reason. That was why government has engaged in even the developed countries in telecommunication, postal services, electricity, and communication for long periods (Cowen and Crampton, 2002).

In other words, government in modern economy interferes to correct the market through regulating the market to overcome monopoly and oligopoly impacts and make sure that natural monopolist markets produces and charges price according to the socially acceptable level.

3.3.1.4 Imperfect Information

In order for an individual to obtain the maximum benefit from the consumption of a good, he or she must possess as much information as possible about it. This makes it possible for the individual to make an informed decision about whether to consume the goods in question. However, in the second best solution of the market system such information is not abundantly and freely available as suggested by the perfect market conditions. Hence, the consumer possesses imperfect information about the goods in the market and will not be able to make an informed decision about them (Stiglitz, 2000).

Market institutions may arise to help overcome information asymmetry such as contingent contracts, seller reputation, and professional associations. Governments do also take measure to moderate the consequences of asymmetric information and moral hazard by the provision of additional information or actions through regulation and legislation (Inman, 1978: 660).

3.3.2 Government Failure

The preceding section provides rationale for the government in economic sphere of a society by referring to the neo-classical economic theory. However, through the years, in addition to market failure, government failure is also observed. In other words, while government intervention was expected to overcome the market inefficiencies, government itself was considered inefficient; and therefore with the Washington Consensus all the countries in the world advised to reduce the role of the state in the economy by reforming and liberalising their economies including through privatisation.

Government failures are "the public sector's version of market failure and happen when a government intervention causes a more inefficient allocation of goods and resources than would happen without that intervention" (Weimer and Vining, 2004:7-9). This was the case in most of the economies by the 1980s, and therefore in order to reduce the efficiencies in the economy, reducing the size of the state is considered as a panacea for the problems.

It should be noted that in particular government was considered a leading solution in developing countries by fostering and achieving development through central planning systems. However, the experience of the government centred economic growth did not produce much better solution for the developing countries. In a critical position, Brown and Jackson (1990: 58) noted that "The government failure literature discards the notion of the benevolent omniscient economic planner serving the public interest and replaces it with a muddling, imperfect,

endogenous state that serves the interests of powerful lobby groups and the private interests of politicians and bureaucrats.”

It should be concluded that the assigned economic role for the public sector has changed over the years depending on the political ideologies of the times in addition to the economic necessities. For example, having some of the developing countries without any infrastructure and sustained economic growth assuming privatisation since 1980s is an imposed political choice rather than economic necessity. Thus, politics is an important determining factor of economic policy choices.

3.4. THEORETICAL EXPLANATIONS FOR THE GROWTH OF GOVERNMENT

The size of government expenditure in general and in promoting economic growth in particular has long been of interest to economists and policy-makers in both industrialised and developing countries. In terms of government expenditure contributing to economic growth, as Keynesian relation (1933) states its acts like an exogenous factor that can be used like a policy instrument to determine growth.

Since this study is concerned with locating the impact of government expenditures on economic growth in Saudi Arabia, this section aims to review the theoretical explanations and models to identify such a relationship. These can be considered as the determining factors of increasing government expenditure; this study however only examines the impact of government expenditures on economic growth in the empirical sections.

This section, hence, first presents macro models developed to explain growing government expenditures; secondly, the micro models of government growth are presented, which is followed by the Public Choice approach to the growth of government.

The macro and micro models that we will consider in this section differ from macroeconomic forecasting models in their analysis of public expenditure, as far as the latter take government expenditure as exogenously determined. In this section, three different theories are presented: (i) Wagner's Law of 'Expending State Activity'; (ii) The Displacement Effect Hypothesis; and (iii) Keynesian Economic Growth and Government Expenditures. In addition, two different micro models are presented: (i) Baumol's Differential Productivity Growth; (ii) Bacon and Eltis' Model.

3.4.1 Macroeconomic Models of Government Growth

In this initial section, main macroeconomic models developed to examine and explain the growth of government expenditures are presented. The survey in this section focuses on Wagner's Law, Peacock and Wiseman Hypothesis, and the Keynesian Relation. Having government expenditures as endogenous factor is the common departing points of these models.

3.4.1.1. Wagner's Law of 'Expanding State Activity'

One of the earliest attempts to explain the growth of government in the sense of increasing public expenditure was made by Adolph Wagner, a 19th century German economist. His theory, which has come to be known as Wagner's Law, is one of the most referred to and tested one in government growth literature.

Wagner's (1893) theory of The Law of Expanding State Activity pointed to the growing importance of government activity and expenditure. In explaining his theory, Wagner (1883: 16) stated that: "The law of increasing expansion of public, and particularly state, activities becomes for the fiscal economy. The law of the increasing expansion of fiscal requirements, both the state's requirements grow and, often even more so, those of local authorities, when administration is decentralized and local government well organized." Recently there has been a marked increase in Germany in the fiscal requirements of municipalities, especially urban ones.

"The law is the result of empirical observation in progressive countries at least in Western European civilization; its explanation, and the causes, is the spheres of private and public economy, especially compulsory public economy. Financial stringency may hamper the expansion of state activities causing their extent to be conditioned by revenue, rather than the other way round which is usual. But, in the long run the desire for the development of progressive people will overcome these difficulties" (Wagner, 1883: 8). Thus, Wagner's Law "pointed to the growing importance of government activity and expenditure as an inevitable feature of a progressive state" (Bird, 1971: 1), which can be formally expressed as a law: "Historically there exists a clear tendency for an expansion of public activity together with the progress of the economy" (Biehl, 1998: 107).

Wagner (1883), thus, investigated a functional relationship between the growth of an economy and the growth of governmental activities and observed and empirically proved that governmental sector grows faster than that of the economy. In other words, Wagener considered that the elasticity of government expenditures in relation to the growth of economy is higher than the unity.

Wagner also presented the motive of the government growth taking into account the historical development of the Western governments during that century. The state activities, according to Wagner (1890: 16), are the provision of necessary conditions for market functioning, maintenance of law as well as order and of participating in material production.

According to Getzler (2000: 13), “Wagner was writing at a specific time and place, when many scholars in Germany became filled with nationalism and the desire for a strong state to heal the political and economic disorders affecting German society.” Under such influences, it is believed that Wagner argued that the social progress of the time resulted in increasing state activity, which in turn meant more government expenditure. Hutter (1982: 134) suggested that “Wagner views the state, represented by the government activity, as an organic part of the social and economic system, and he expected that the state would tend to grow proportionally with the growth of the economy as a whole.”

Wagner offered three reasons why this development would come about with respect to the changing and expanding functions of the state. In understanding the reasoning, it is important to point out that these ideas were formulated in Germany in the later 19th century which was experiencing industrialisation and hence economic growth. Not surprisingly therefore, Wagner’s Law was framed to refer only to states in which income was rising because of industrialisation. The conditions under which one might expect the ‘Law’ to operate would therefore seem to be (i) rising per capita incomes; (ii) technological and institutional change of a particular sort implying that in particular the state had an increasing role in production where technical conditions favoured monopoly; and (iii) at least implicit democratisation of the polity (Ghamdi , 1983) implying that Wagner saw increasing state activity in fields like education where the social benefits of the service were not susceptible to economic evaluation.

In a more formal manner, according to Wagner (1893), growth of the public sector is due to the above mentioned three reasons which can also be expressed in the following manner:

- (i) The demand for public goods grows with the increase of population in cities, leading to higher demand for infrastructure, leading to the growth of industrialisation and therefore achieving a more integrated development which requires control and management of the state and then leading to expansion of the public sector.
- (ii) The more income in the economy, the greater the demand for goods of high flexibility, such as education and the elastics of cultural goods and services that lead to a rise in government spending.

- (iii) The financing of projects with long-term development goals accompanied by technical changes lead to pressure on the state to a greater involvement in the economy, which will have financial implications on the budget.

Over the decades, a large number of studies conducted to test the Wagner's Law in different cases. As a result of this process, depending on the understanding of the concerned scholar, different versions of Wagner's Law have been developed, namely: Peacock and Wiseman (1961), Gupta (1967), Goffman (1968) and Goffman and Mahar (1971), Pryor (1968), Musgrave (1969), and Mann (1980) versions of Wagner's Law. It should be noted that all these different versions are due to the fact that in the original version, it is not clear whether Wagner was referring to an increase in (i) absolute level of public expenditure; (ii) the ratio of total government expenditure to GNP; or (c) the proportion of the public sector to the total economy. Consequently, there are at least six models of Wagner's law which have also been empirically tested. These are all explained in detail in the modelling chapter.

It should be noted that among the empirical studies, some studies have shown that Wagner's law of expanding state activity holds with higher levels of economic development (Dutt and Ghosh, 1995).

Henrekson (1993), for example, found a positive relationship between economic growth and government expenditure in Sweden, and his result confirmed that the real GDP explained the growth of government expenditure in the economy. In addition, Murthy (1993) found supporting evidence in favour of Wagner's law using data from 1950 to 1980 in Mexico. Further empirical studies on Wagner's Law is presented in a later section,

3.4.1.2. The Displacement Hypothesis

While Wagner sought to explain the trend in public expenditure, the most useful pioneering work in Britain, that Peacock and Wiseman (1961), offered a working hypothesis to explain the fluctuations in government expenditure over time. Peacock and Wiseman, in their work published during the early 1960s, aimed to locate the pattern of public expenditure trends (Peacock and Wiseman, 1961; xxiii). According to what later is known as Displacement Hypothesis, government expenditure tends to evolve in a step-like pattern, coinciding with social upheavals, notably wars. The disincentive effects of high marginal rates of tax, popular notions of tolerable tax burdens and the degree of political control exercised by the citizens over their government, encouraged by a rising output per person, are some of the major foci of study.

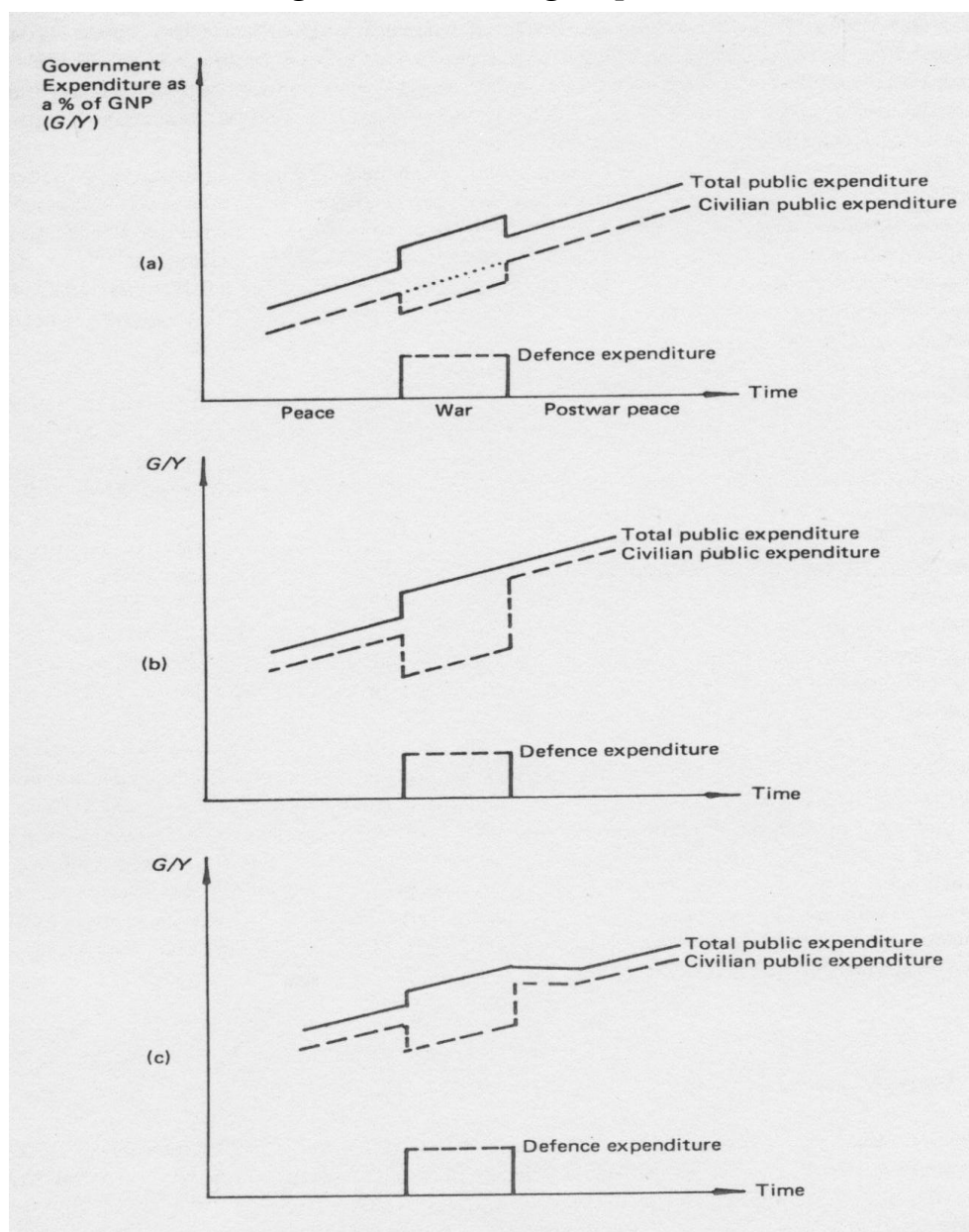
Peacock and Wiseman (1961:24-27) also investigated and found that "both citizens and government hold divergent views about the desirable size of public expenditures and the

possible level of government taxation. This divergence can be altered by social disturbances that destroy established conceptions and produce a displacement effect. People will accept, in a period of crisis, tax levels and methods of raising revenue that in quieter times would have been thought intolerable, and this acceptance remains when the disturbance itself has disappeared."

Revenue and expenditure statistics of governments also show a displacement effect after periods of social disturbance. Expenditures may fall when the disturbance is over, but they are less likely to return to the old level. "The state may begin doing some of the things it might formerly have wanted to, but for which it had hitherto felt politically unable to raise the necessary revenues" (Peacock and Wiseman 1961: 26). Peacock and Wiseman (1961) contended that under normal conditions of peace and economic stability, changes in public expenditure are quite limited.

In a simple language, Displacement Hypothesis states that "the effect of public expenditure on the time pattern will tend to be constant over time, rather than increasing, unless major crisis periods occur which require an increase in government intervention" (Peacock and Wiseman, 1961:24-26). The associated expansion of the public sector will not just be temporary after such an event, since the new levels of government expenditure and taxation will be accepted by the electors and public sector size will remain stable at a higher level until the next shock. According to the Peacock and Wiseman model (Brown and Jackson, 1990:123-127), therefore, the time-pattern of government expenditure normally increases stepwise, rather than linearly. They investigated the concept that public expenditure increases stepwise during war times due to higher military expenditures and that after a significant period military expenditures return to their previous values. On the other hand, the government expenditure as a whole was not restored to its earlier levels. Total government expenditures decrease after the war, but it stabilises at a higher level compared with the pre-war period. It can also be noted that the Peacock-Wiseman hypothesis proposed that public rationalisation during the time of expenditure growth occurred more freely than related to the size of the ultimate government expenditures. The entire process is depicted in Figure 3.1.

Figure 3.1: Illustrating Displacement Effect



Source: Brown and Jackson (1990:126)

According to, Brown and Jackson (1990), figure 3.1 shows three possible patterns of the influence of war expenditures on government expenditures. Figure 3.1 (a) shows that case in which civilian public expenditures in the post-war period return to their original growth path; whereas Figure 3.1(b) represents the case in which the trend in total public expenditure experienced during the war period continues into the post-war period along with an upward shift in the level of civilian public expenditures. In the final example, Figure 3.1(c), there is an increase in post-war civilian public expenditures. This, however, is only a temporary phenomenon until

the old trend line is reached. The long-term trends shown in cases 3.1(a) and 3.1(c) are thus similar and show that there has been a permanent displacement of private by civilian public expenditures (Brown and Jackson 1990:124-127).

It should be noted that due to such features of the Displacement Hypothesis, Brown and Jackson (1990: 123) noted that "Peacock and Wiseman's study is probably one of the best-known analyses of the time pattern of public expenditure".

In terms of empirical contextualisation, Borcharding (1965) did not find any evidence for a displacement effect. A new analysis focusing on the time-series behaviour of government expenditure has developed and was tested on data from Sweden and the UK, which located upward displacement after World War II, and good evidence against the hypothesis was found (Henrekson, 1993). Such studies are detailed and presented in a later section,

Displacement Effect is articulated as a theory of structural break by Diamond (1977) due to the nature and operating mechanism of the observed government expenditures. In addition, some other contributors considered the initial jump in the government expenditures after a social upheaval as ratchet impact. The following section explores these two features of the Displacement Effect.

3.4.1.2.1. The Displacement Effect: Structural Break

Wars and other social and political upheavals are capable of displacing this notion of tolerable tax rates and hence facilitating the shift in the level of government expenditures. After such events, government expenditure may fall again, but not to their previous levels. Therefore, public expenditure grows in a discontinuous and stepwise fashion, the steps occurring at times of major social upheavals (Demirbas, 1999).

In other words, Peacock and Wiseman (1961:24-27) investigated that "both citizens and government hold divergent views about the desirable size of public expenditures and the possible level of government taxation. This divergence can be adjusted by social disturbances that destroy established conceptions and produce a displacement effect. People will accept, in a period of crisis, tax levels and methods of raising revenue that in quieter times would have been intolerable, and this acceptance remains when the disturbance itself has disappeared." Thus, the hypothesis indicates that there is the structural change in government expenditures in terms of the trend.

In explaining the 'displacement effect hypothesis', Henrekson (1990: 246) states that "Peacock and Wiseman (1961), adopt a clearly inductive approach to explaining the growth of

government expenditure. When Peacock and Wiseman observed that expenditures over time appeared to outline a series of plateaus separated by peaks, and that these peaks coincided with periods of war and preparation for war they were led to expound the ‘displacement effect’ hypothesis”. Such an explanation refers to the structural break nature of the hypothesis. Diamond (1977), therefore, presented the displacement effect as a theory of structural break. He used the Chow test, comparing two periods separated by a social upheaval, and he found that, if this shows significant structural change and there has been displacement.

3.4.1.2.2. The Displacement Effect: Ratchet Effect

The ‘ratchet effect’ refers to the restrained ability of processes to be reversed once a specific thing has happened. The term is used within the ‘displacement effect hypothesis’ to describe the seemingly irreversible expansion of government in times of crisis. In other words, as explained due to the expansionary government expenditures during crises periods, governments then have difficulty in reducing government expenditures back to the original level after the initial temporary needs due to war, natural or economic crisis. The government’s exploitation of taxpayers’ tolerance plays an important role in this process. Thus, the main argument of the ratchet effect is that if there is a crisis and government expenditures grows as a result, then the public expenditure might decline but not to the previous level as there would be resistance against such a move.

According to Bird (1972), within the displacement effect, this resistance to get over displacement effect by public expenditure returning to the original level is named as ‘ratchet effect’. However, it should be noted that Peacock and Wiseman (1979) argued that in the extreme, the ratchet effect interpretation of the displacement effect leads to the denial of its very existence.

3.4.1.3. Keynesian Relation: Economic Growth and Government Expenditures

Another model using Wagner’s approach to explain economic growth and government expenditures is associated with Keynes as was mentioned previously. Keynesian theory articulates the idea on the role that the government expenditures or fiscal policy plays in cases when aggregate demand in the economy is declining.

It is essential to note that Keynesian relation is related to the Wagner’s Law, which considers that public expenditures are income elastic. Keynesian idea of aggregate demand and its role in the economy in stabilising the economy was central to his argument, as he considered that total income is a function of the level of operation in any country, and hence the greater the

scale of operation, the greater the total income. Therefore, he suggested expansionary economic policies through fiscal policy for the growth of the economy, which by definition treats public expenditure as an exogenous factor (Keynes, 1936) as oppose to other theories.

Keynes (1933) found that public expenditures could contribute positively to economic growth and governments should use public expenditure as a tool of economic policy to manage national economies. Keynes' theoretical and policy suggestions helped to get the economies of the industrialised world out of stagnation in 1930s by heavily relying on government expenditure to boost aggregate demand. This is expected to render economic growth through expanding the economic activity. Therefore, it establishes a direct causality between government expenditures and economic growth.

It should be noted that Keynesian policies very much remained as an important policy option until 1970s, when the growing government began to be perceived as part of the government failure as well.

3.4.2. Microeconomic Models of Government Growth

After presenting the theoretical macroeconomic models related to the growth of government expenditures, this section considers microeconomic theoretical explanations for the growth of government, mainly, in the western industrialised democracies.

3.4.2.1. Baumol's Differential Productivity Growth

Baumol (1967) argues for 'differential productivity growth between private and public sector. According to this explanations, there are two sectors in the economy one of it is productive, and the other one is unproductive, namely private and public sectors respectively. Second, the wages in the two sectors of the economy rise and fall together. Finally, the money wages increase as rapidly as output per hour in productivity increases. Furthermore, Baumol (1967) argues that a differential function of productivity based on these assumptions – after developing and analysing the cost per unit of the unproductive sector – rises without limit. In addition, there is a tendency for the outputs of the unproductive sector, whose demands are not highly inelastic, to decline and vanish. According to Baumol (1967), in the unbalanced productivity model – if the ratio of output of the two sectors held constant – this suggests that more of the labour force must transfer to the non-progressive or unproductive sectors (Brown and Jackson, 1990).

The progressive sector was characterised by cumulative increases in productivity per man-hour that arise from economies of scale and technological change. In the non-progressive

sector, labour productivity advances at a slower rate than that experienced in the progressive sector. Baumol's results depend upon there being a productivity differential between the two sectors. This does not imply, as some have incorrectly thought, that there are always zero productivity increases in the non-progressive sector. One reason for the existence of a productivity differential is the key role that has been played by labour inputs in the non-progressive sector's goods. Baumol's model, thus, provides a possible explanation of public expenditure growth, which is mainly explained by inefficiencies.

Baumol (1967) also investigated the differing inflation rates between the public and private sector. He argued that the inflation rate for the government would be higher than that experienced by the private sector.

In supporting 'Baumol's Disease', Le Grand (1991) argued that an analysis of growth in public sector reveals that almost half of the increase in the public sector can be attributed to what has come to be called 'Baumol's Disease'.

3.4.2.2. Bacon and Eltis' Model

Bacon and Eltis (1978) argued that Britain's long-term problems are reflected in high public spending, who states that the public sector increased quickly in size through the 1960s and early 1970s, which had to be financed by production of marketed output. Although taxes were levied to support the public sector, the wage earners, arguments run, had either not valued the increased social wage or had not assumed any change in the social wage, and had tacitly refused to support the public sector (Ansari, 1994).

According to Bacon and Eltis, labour's concern with take-home pay led them to resist tax increases with claims for wage increases. In Bacon and Eltis (1978), trade unions passing on taxes to profits following a period of rapid wage increases achieved their desired position in that model. Retained profits are the main source of investment funds in the UK, so that ultimately the cost of the increased public sector reduces investment and there are consequent economic problems on all fronts. On the other hand, Bacon and Eltis argue that there is a fundamental fault in the UK economy caused by the fact that few people produce marketed goods and services. Marketed outputs are those, which are sold, and non-marketed products are those that are not. They have argued that the main problem with the UK economy is that an increasingly large proportion of the nation's total resources have moved into the non-marketed sector. Furthermore, they have produced figures to show that employment in the non-marketed sector and mainly in the public sector increased by over 40 per cent between 1961 and 1975 (Bacon and Eltis, 1978).

Thus Bacon and Eltis (1978) rather than locating the reasons of increasing government expenditures, they focused on the consequences of expanding public sector, which was considered as an important reason for the economic difficulties in the UK by Bacon and Eltis.

3.4.3. Public Choice Approaches to the Growth of Government

In addition to the mainstream micro or macro determinants of government expenditures and the related methods, a number of theoretical explanations are also developed by the public choice approach, which is explored in detail. Further discussion on the empirical studies on the topic is provided in the following section.

It should be noted that the modern public choice is a study of political mechanisms and institutions in terms of government and individual behaviour through tools and methods of economic analysis. In other words, as Mueller (1989: 1) stated “public choice can be defined as the economic study of non-market decision making, or simply the application of economics of political science”. It means that public choice takes as its province the application of economists’ methods of a positive analysis of problems that have conventionally been regarded as those of political science, concerning events generally in the public sector.

The subject matter of public choice is mainly political issues and the causal impact between economics and politics. This directly refers to public sector and therefore public sector is the natural field of study for public choice analysis, which, thus, has developed approaches in understanding the growing size of government. The following sections present the public choice approach to growth of government.

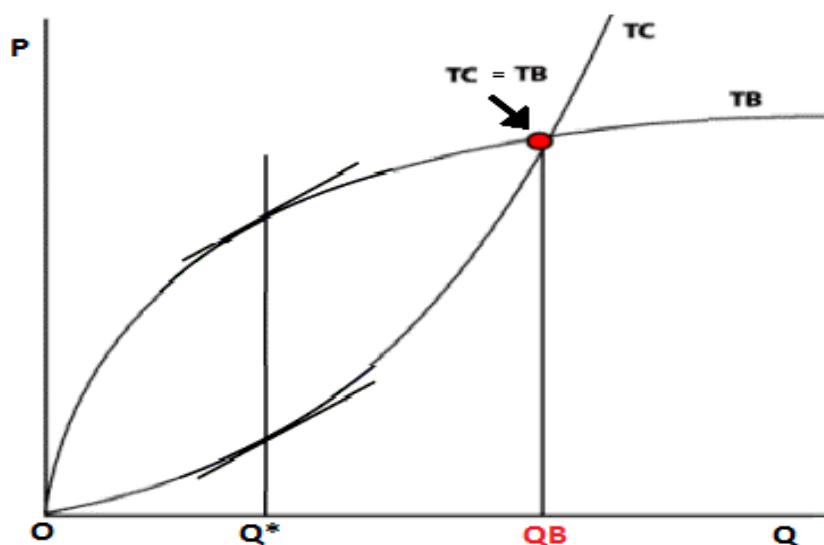
3.4.3.1. Bureaucracy and the Growth of Government

Public choice school with its critical approach to the public sector mainly through the writings of Niskanen developed the understanding that one of the reasons of increasing government size is the strong position of bureaucracy. The argument is that the government managed to cover the bureaucracy by the use of higher bureaucrats who were intent on the continued existence of the system for their personal benefit.

Bureaucratic responsibilities and assignments exist to attain numerous goals. However, bureaucracies are noted for their size and complexity and bureaucrats work to become part of the system with many rules of bureaucratic behaviour frequently tied to the letter of the law. The presence of a large administrative authority assumes a goal of coordinating the sections in decision-making.

The bureaucracy models of Niskanen (1971) and Romer and Rosenthal (1978, 1979b, 1982:27-43), explain why the government might be larger than its optimal size or even as expected by legislature, as legislation would prefer if it knew the unit costs of the outputs it thought it was buying, and why the level of outputs might be larger than the median voter's most preferred level. According to Niskanen (1971), the bureaucrat's primary purpose is to achieve power and status, which positively correlates with the size of the budget allocated to his or her department. Therefore, the government worker starts with the assumption that the bureaucrat's objective is to maximize his or her budget, as explained in Figure 3.2.

Figure 3.2: Niskanen's Model of Bureaucracy



Source: Niskanen's model (1971)

As can be seen from the Figure 3.2, if we suppose the bureaucrat knows that the sponsor of his or her bureau's budget allocation will accept any project whose total benefits exceed total costs, the bureaucrat proposes QB, the output level that maximizes the size of the bureau, subject to the constraint that total cost (TC) is not above total benefit (TB). Thus, the solution produced by the bureaucracy is beyond the efficient output level and hence the bureaucracy in order to expand their size by producing inefficient outcome they use government expenditure, which leads to the linear growth of government.

In support of the idea of the sustaining their position, Wolfinger and Rosenstone (1980: 97-1011) argued that "government workers or bureaucrats have higher voter participation rates than do private employees but that this is not conclusive support for the salary growth assertion. In other words, government employees have much at stake when voting, and that this explains why participation rates are higher for government workers than for people who depend on the private sector for their primary services."

It should be noted that this explanation of the role of bureaucracy in producing an inefficient outcome should not be limited to the central and local governments only, but this also observed in a growth industry or in the private sector.

The theory of bureaucracy may not offer a comprehensive explanation of the growth of government expenditure and it would be difficult to test it empirically. Mueller (1989) argued that bureaucracy incorporates the ability to inflate both the price and quantity of their activity. But Jackson (1990: 8) pointed out “there are no obvious measures of bureaucratic strength.” However, the theory of bureaucracy presented by Niskanen (1971) puts forward the role of interest of the bureaucrats. The theory that bureaucracy increases the growth of government presumes that the bureaucracy can mislead the government about the costs of different levels of production. Niskanen (1971) has used this assumption to analyse the penalty of pretentiousness when bureaucrats exploit the size of their budgets. Not amazingly, the model implies larger budgets than have been required by the governmental demanders. His study has become the theoretical foundation for a significant section of the literature on the growth of government.

Tullock (1974) for example, in a dynamic prediction about bureaucracy considers the extent to which bureaucrats convert their power into high wages and salaries. He notes that bureaucracy can contract if the number of bureaucrats is falling. This can lessen the positive influence of the goods themselves (Niskanen, 1971).

Finally, considering the impact of the bureaucratic role on the expansion of the state led to the emergence and growth of the behavioural theory of institutions, and therefore it helps to shed a great deal of light onto the growth of government expenditures through internal dynamics of bureaucracy as an institution and bureaucrats as individuals.

3.4.3.2. Interest Groups and the Growth of Government

The view of the public interest and the role of interest groups are essential to what is described as the public interest approach to the political decision making including public expenditures. To describe government growth over time using this approach, one must certainly argue that interest groups’ bargaining power has developed over time; governments have become less unified over time, or various mixtures of the two.

As the main contender, Olson (1982) argued for the growth of interest groups, however, and Murrell (1984) presented support consistent with Olson’s hypotheses relating to the causes of interest group arrangement. It is thus considered that the various interest groups create pressure on government and bureaucracy leading to growth of the government. It should be

mentioned in the passing that bureaucracy is also considered as an interest group within this approach.

According to Olson's seminal theory, the steady economic situation in developed Western countries since World War II has facilitated the growth in interest groups. "Growing specialisation also created a host of new interest groups" (North and Wallis, 1982: 340). In other words, the growing interest groups is seen as a reaction to the larger transaction costs of organising in a market economy with increasing specialisation (North, 1985). The role of interest groups can be considered as helping to develop the economies, and therefore lack of interest groups in underdeveloped countries may help to clarify the situation of relatively poor countries.

The role of interest groups in influencing the behaviour of voters, the passage of legislation, and operation of the bureaucracy has been widely discussed (Niskanen, 1971). Traditional views of interest groups regard it as natural that individuals with common goals tend to form groups to further their common interest with the objective of maximizing their welfare by lobbying the government. In other words, the theory of interest group formation is founded on individual self-interest, but alternative views of political motives may lead to quite different results (Atkinson and Stiglitz, 1980).

Mueller and Murrell (1986) report investigations of empirical evidence suggesting that interest groups have an effect on the size of government. They found a political method in which parties supply interest groups with favours in exchange for the interest group's evidence. Lybeck (1986: 88-96) found that the relative size of government in Sweden varied over time with the relative fraction of employees who were members of interest groups. A study by McCormick and Tollison (1981: 9-45) found that the extent of economic regulation within a state varied directly with the number of trade associations registered in the state. In a number of cross section econometric and sample specification studies, the number of interest groups shows as consistently positive result, leading Mueller and Murrell (1986: 140) to suggest that those interest groups are able to influence public policies in such a manner as to lead to increased government size.

Hunter and Nelson (1989) have investigated evidence from Louisiana showing that organised farmers and wealthy homeowners were able to lower their tax burdens. Rice (1986) found evidence showing that labour unions and other interest groups were able to persuade governments to initiate programs to counterbalance economic hardships; and also that such a group's programs helped provide an explanation for the growth of government sectors in European countries between 1950 and 1980. In a similar line, North and Wallis (1982), for

example, found a correlation between the growth of government and the growth of white-collar and managerial employment in the private sector.

The demands that interest groups put upon government are not for a redistributive hand-out, but are to improve the transaction costs these groups stand within in an increasingly specialised society. However, their impact on resource allocation and the pressure on the government to act in their favour are considered as one of the reasons of growing government.

3.4.3.3. Median Voter and Redistributors Role of Government

One of the main arguments developed in public choice theory is ‘median voter theorem’, which is also employed to explain the growing size of government. The obvious point for a public choice account of public expenditure is the median voter model, which is “the voter whose preferences lie in the middle of the set of all voters’ preferences. Half of voters want more of the good, and half want less than the median voter” (Rosen, 2005:117)

Median voter theorem implies that voters have single peaked preferences, or policy bliss points, and can be described by a distribution function arraying them in a simple two dimensional policy space. The objective is to look into the political process closely to see how individuals express their views on economic matters, and how that is translated into political action, how it works with different voting rules, and whether the resolution reflects the wishes of the public, or if the government simply imposes its will. The median voter theorem hence implies that the preferences of the median voter determine the policy outcomes of the governments. Since median voters act to maximise their own benefits, they prefer higher public expenditures, which results in increased government size through redistributive policies. However, Atkinson and Stiglitz (1980) argued that, since median income is below mean income in virtually all societies, this would suggest that public expenditure on goods and services would be less than the efficient level.

In support of the median voter theorem, Schneider (1994: 178) for instance, argues that the median voter votes for the party whose political program is strongly in tune with their own preferences. Denzau and Mackay (1976) also pointed out that benefit shares and tax share will affect the quantity of local public goods the median voter will demand.

Pommerehne and Schneider (1978) point out that median-voter model perform better when local institutions are consistent with their adoption. In the case of redistributive public expenditure, the flavour of this effect is reversed. This can be seen within the model developed by Meltzer and Richard (1978, 1983) in which there is a simple technology for income redistribution that consists of a proportional income tax and a tax rate tied to the median voter. In this setting, all individuals with productivity greater than or equal to the mean will vote for a

tax rate of zero. Redistribution will occur only if the median voter's productivity income is below the mean. The lower the productivity of the median voter the greater the redistribution will be.

In short, median voter preferences can have deterministic effect on the government spending policies, and does result in increased government expenditures through redistributive but also direct policies.

3.4.3.4. Fiscal Illusion

It is argued within public choice theory that fiscal illusion encourages certain characteristics of a government's revenue collection system that hide the cost of public goods leading to growing government. In other words, citizens do not realise the real costs of public goods they demand and therefore they continue to increase their demand due to the fiscal illusion in the sense of the tax they pay for the increased public expenditures.

Fiscal illusion states that if people do not appreciate the burden that is accruing from government expenditure and tax relief, they may stick to the growth of the expenditure. Congleton (2001) established that the fiscal illusion hypothesis presumes that the government can deceive people about the true growth of government. Wagner (1976) draws attention to the role of the tax system in fiscal illusions. In particular he considers rising revenue and postulates, "The accuracy of a person's perception of the cost of government will vary inversely with the complexity of the revenue structure" (Wagner, 1976: 52). Thus, the government size is considered to be increasing due to the fiscal illusion people under in demanding more public goods.

3.5. THE COMBINED MODEL OF GOVERNMENT GROWTH

The preceding section presented a number of model and theory developed over the decades to explain the growing size of government or the increasing government expenditures. Each of these models and theories, however, provides an explanation to the issue in question and represents an approach, and therefore each one of these should be considered as partial analysis.

In their attempt, however, to provide a comprehensive model, Brown and Jackson (1990) present a combined model, which aims to explore and describe the factors that influence the level of public expenditure in an integrated manner. The model can be explained through the help of Figure 3.3 in four quadrants (Brown and Jackson, 1990: 143).

'Quadrant I' explains the the demand curve of the average voter and the average cost curve for publicly supplied goods. In this part, we find the horizontal axes in the presentation of

the tax price, the demand curve for the median voter and the average cost curve for publicly supplied goods.

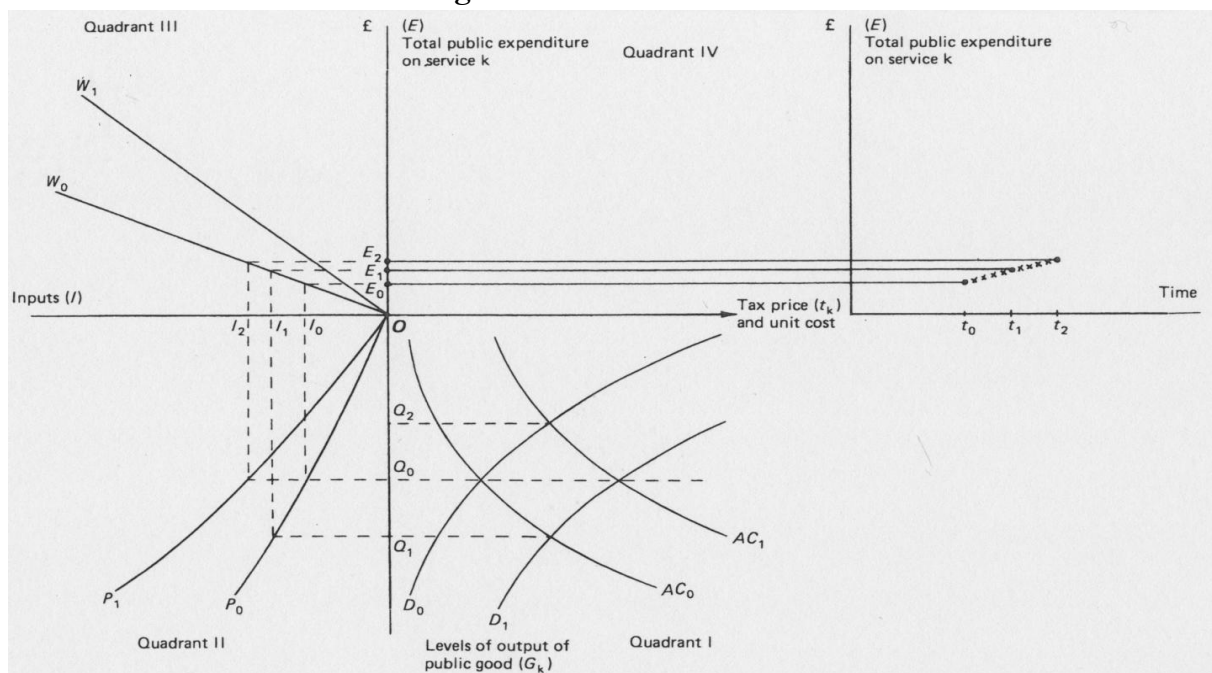
‘Quadrant II’ depicts the production of goods and services supplied. In other words, the production function refers to the number of values and actors required in the production process, such as technology, size of population, and the quality of services.

‘Quadrant III’ contains significant elements, namely, labour and capital. It makes use of the input unit cost line OW_0 to cost the service. if, for example, a single inputs such as labour was used in the production of G_k then the slope of OW_0 could be thought of as the wage rate, which when multiplied by the total volume of labour inputs used would result in a value for total cost or total expenditure (Figure 3.3). So we find that the impact of work is the amount of labour used in the production process and has a direct impact on the total expenditures or costs (Brown and Jackson, 1990: 145).

‘Quadrant IV’ shows how to follow up behaviour change in the total expenditure over time through changes in the functions in the previous parts to consider what can be called change over time or ‘time pattern’ (Brown and Jackson, 1990: 144). This shows the dynamic nature of the problem but also the on-going change in the public expenditures through the changes take place in other variables.

Through the four quadrants in the model and the mechanism, we find that the net effect is to show the relationship between overall spending, change over time and its impact on services and products offered.

Figure 3.3: The Combined Model



Source: Brown and Jackson (1990)

3.6. RENTIER STATE AND GOVERNMENT EXPANSION: A POLITICAL ECONOMY APPROACH

The preceding sections present various macro, micro and public choice models in an attempt to develop an understanding into the growth of government or the increasing public expenditures which complemented with the combined model. However, there is an important aspect for government growth, which is the political economy nature of it. In other words, political economy approach can help to develop an understating beyond the functional explanations offered by other approaches.

In the political economy approach in addition to public choice approaches, the social formation of a society together with its political culture is considered to have important impact on the economic performance and also on the nature of fiscal policy. In other words, the political economy of a country also determines the size of the government in that society. In a liberal political economy setting, the economic role of the state will be minimal while in a socialist or welfare state setting the state will have more social role than economic role in terms of redistribution but also regulation of the economy. The developmentalist political economy brings about additional roles for a government in terms of undertaking the development of the society due to the lack of private capital and lack of civil society. Furthermore, some societies are considered as rentier state as part of their political economy in which the state remains the generator of wealth and distributes these to the larger population and hence the rentier state controls the entire economy and polity.

The rentier state is a state that feeds on proceeds from abroad, either from the sale of raw materials or through the provision of services. The rentier state is a country that “receives on a regular basis substantial amounts of external economic rent” (Mahdavy, 1970: 428). The rent economy is then divided between the various stakeholders in the society. In general most of the developing countries, and in particular most of the Middle Eastern states are ‘rentier states’ (Shambayati, 1994: 307),

In rentier states, loyalty to the system is the most reasonable course of action for all the economic stakehodlers as well as individual citizens. In the process, government expenditures is used to create support but also sustain support. In this process, the state of privileges and distributed enterprises go to pro elite, the middle classes and intellectuals, who would spoil the shape and category of intellectual and cultural sector cash separately. The rentier state implies, hence, that democracy is in question in such settings.

The rentier state analysis is based on the observation that the amount of money collected by the oil-rich governments is not from taxes, but rather comes from the proceeds of natural

resource extraction. According to the theory of the rentier state (Mahdavy, 1970), on condition that the state obtains ample amounts of such income; it may not have a strong impulse for democracy, change, and development.

As part of the articulation of rentier state, for example, in the Gulf Countries, governments of oil-exporting countries to embark on large public expenditure programs without the imposition of taxes. They do not fall into deficit in balances of payments and have no financial difficulties or inflation, which the suffering states in most of the developing world, must contend with. This does not necessarily result in a socialist system, but it can turn into what may be considered a lucky state. The government becomes an important factor, but does not have such a critical role in the economy. Beblawi and Luciani (1987) took this kind of state as his point of departure and propose a new classification based on their productive functions.

Beblawi and Luciani (1987: 51) detail "the features of a rentier state. First, the rentier economy of which the state is a subset must be one where rent situations predominate. Second, it must be external to the economy. Furthermore, the rent must appear from external sources. National rent, even if it were extensive enough to dominate, is not enough to typify the rentier economy because economic rent is an income factor that only results from production and investment at risk with respect to internal forces of production. Furthermore, the open economy with elevated levels of distant operation is not rentier, even if it depends mainly on rent because the majority of the society is actively involved in the creation of wealth. Finally, the government must be the receiver of the external rent." This last point is related to the absorption of rent into the hands of the few, to use a phrase popular among modern political scientists (Beblawi and Luciani, 1987).

Beblawi and Luciani (1987: 224), articulating the rentier state in the case of the Gulf region by applying their criteria consider that "the heritage long characterised by the purchase of tribal loyalty and devotion across the country, promotes the distribution of benefits and grants for the population" resulting ever increasing government expenditures. In supporting this, Ayubi (1991) also considers the rentierism as part of the traditional social formation of the Arab states in identifying the factors of production in the region.

It should be noted that the rentier state and political economy will be particularly important in understanding the growth of government in Saudi Arabia. However, this study is delaminated with the search for the nexus between government expenditure growth and economic growth and will only briefly refer to the political economy approach in reflecting on the results.

3.7. SURVEYING THE EMPIRICAL STUDIES ON GOVERNMENT GROWTH

Over the decades, interest in understanding the determining factors as to why governments have grown in different political and economic setting. As presented above a number of theories and models have been developed since Wagner's Law, but also a large body of empirical studies conducted in the case of different countries to search for the validity of these models and theories. With the development of knowledge in econometric modelling, the nature of empirical studies has been sophisticated such as using time-series analysis. The following table provides a summary of the sampled papers from the existing body of empirical studies by referring to their methodology and the main results. Indeed, the empirical studies cannot be limited with the ones presented, as rather large number of such studies exists, but this list aims to provide a general understanding and pattern in government growth studies (Table 3.1).

Table: 3.1. Surveying the Empirical Studies on Growth of Government

Author	Version	Model	Econometrics Test	Country	Result
Kumar (2009)	All Versions	Log-linear /Cross & Time Series	Co-integration test	East Asian, countries 1960- 2007	Wagner's Law does hold East Asian countries, except for Hong Kong.
Samudram , Nair & Vaithilingam (2009)	Gupta's, Mann's & Musgrave's	Log-linear / Time Series	Co-integration & Bounds test	Malaysia, 1970– 2004	Supporting both Keynes view and Wagner's Law.
Ziramba (2008)	All Versions	Log-linear / Time Series	Co-integration & Granger non-causality test : Toda and Yamamoto	South Africa, 1960- 2006	The short-run causality find bidirectional causality, and Wagner's law finds no support in South Africa.
Asutay & Al Fazari (2007)	Wagner's Macroeconomic Model	Log-linear / Time Series	Co-integration, Causality & Error Correction test	Oman, 1971-2002	The results do not provide evidence for the government expenditures and economic growth.
Sideris (2006)	All versions except Pryor's	Log-linear / Time Series	Co-integration, Causality test	Greece, 1833 – 1938	The results support Wagner's hypothesis.
Al-Qudair (2005)	P&W's Following Kolluri	Log-linear / Time Series	Co-integration , Granger causality & Error Correction test	Saudi Arabia, 1970- 1999	Support Wagner's Law, that real government expenditure has determined largely by real gross domestic product.
Dritsakis and Adamopoulos (2004)	P&W, Musgrave's, Goffman's	Log-linear / Time Series	Co-integration	Greece, 1960-2001	Growth in government size has positive effects on economic growth.
Wahab (2004)	Musgrave's	Log-linear / Time Series	Co-integration	OECD, 1950-2000	Mixed results
Halicioglu (2003)	Musgrave's	Log-linear / Time Series	Co-integration	Turkey, 1960-2000	Growth in government size has negative effects on economic growth.
Al Batel (2002)	All Wagner's Versions	Log-linear / Time Series	Co-integration , Causality & Error Correction test	Saudi Arabia 1964-1998	The results suggest existence of Wagner's law.
Al-Faris (2002)	Gupta's, Musgrave's	Linear-Time Series	Co-integration	GCC, 1970-1997	There is a positive relation between government expenditures and GDP
Burney (2002)	Musgrave's	Log-linear / Time Series	Co-integration	Kuwait, 1969-1994	Growth in government size has negative effects on economic growth.
Chang (2002)	All versions except Pryor's	Log-linear / Time Series	Co-integration	6 countries, 1951- 1996	Mixed results
Legrenzi, G. and Milas (2002)	All versions	Linear-Time Series	Co-integration	Italy, 1959-1996	No support for Wagner's Law
Islam (2001)	Musgrave's	Log-linear / Time Series	Co-integration	USA,1929-1996	There is a positive relation between government expenditures and GDP

Kolluri, Bharat R., <i>et al.</i> (2000)	P&W's	Log-linear / Time Series	Co-integration	G7 countries, 1960-1993	There is a positive relation between government expenditures and GDP
Asseery, <i>et al.</i> (1999)	Goffman's, Musgrave's	Log-linear / Time Series	Co-integration	Iraq, 1950-1980	Mixed results
Alleyne (1999)	Musgrave's	Log-linear / Time Series	Co-integration	4 Caribbean countries, 1950-1991	Growth in government size has negative effects on economic growth.
Biswal, <i>et al.</i> (1999)	P&W's, Goffman's, Gupta's	Log-linear / Time Series	Co-integration	Canada, 1950-1995	Mixed results
Thornton (1999)	P&W's	Log-linear / Time Series	Co-integration	6 develop countries, 1850-1913	There is a positive relation between government expenditures and GDP
Abizadeh & Yousefi (1998)	P&W's	Time Series	OLS	South Korea, 1960-1990	There is a positive relation between government expenditures and GDP
Azam (1998)	P&W's following Diamond's Model	Log-linear / Time Series	Using Perron's procedure , Co-integration, Causality & Error Correction test	Malaysia, 1961-1990	Cannot trace a structural break in total government expenditure, GNP and ratio of government expenditure in GNP to verify the Peacock – Wiseman Hypothesis.
Azam (1998)	All versions except Pryor's & P&W's	Log-linear / Time Series	Co-integration, Causality & Error Correction test	Malaysia, 1961 - 1990	No Causality to support Wagner's law , and Musgrave's, Mann's are not co-integrated.
Karagianni, <i>et al.</i> (1998)	All versions	Log-linear / Time Series	Co-integration	EU, 1949-1998	Mixed results
Kireyev (1998)	All Versions	Log-linear / Time Series	Granger Causality test	Saudi Arabia, 1969-1997	The growth in the non-oil private GDP was significant and positively correlated with government expenditure.
Sinha (1998)	All versions	Log-linear / Time Series	Co-integration & Granger Causality test	Malaysia, 1950-1992	Causality tests indicate the absence of short-run relationship whereas the presence of co-integration indicates long-run relationship.
Abdel-Rahman and Barry (1997)	Musgrave's	Log-linear / Time Series	Co-integration	Saudi Arabia, 1970-1991	Mixed results
Ansari, <i>et al.</i> (1997)	Gupta's	Log-linear / Time Series	Co-integration	3 African countries, 1957-1990	No evidence supporting the existence of long-run relationship between government expenditure and national income.

Chletsos and Kollias (1997)	Gupta's	Log-linear / Time Series	Co-integration	Greece, 1958-1993	Only the growth of military expenditure may be explained in terms of Wagner's Law.
Afxentiou and Serletis (1996)	All Versions	Time Series	Co-integration	Six countries, 1961-1991	There is no evidence supporting Wagner's hypothesis that there was a long-run relationship between both, total government expenditure and GDP, also between the categories of government expenditures.
Ahsan, <i>et al.</i> (1996)	P&W's, Musgrave's	Log-linear / Time Series	Co-integration	Canada, 1952-1988	There is a positive relation between government expenditures and GDP
Bohl (1996)	Musgrave's	Log-linear / Time Series	Co-integration	G7 countries, 17	Mixed results
Payne and Ewing (1996)	Musgrave's	Log-linear / Time Series	Co-integration	22 countries, 1948-1994	Mixed results
Ferris and West (1996)	Musgrave's	Linear	OLS	USA, 1959-1989	No support for Wagner's Law
Ashworth (1995)	P&W's	Log-linear	Linear error-correction model	UK	He found evidence for structural changes in the post-war in UK.
Nomura (1995)	P&W's following Diamond's Model	Log-linear	Chow test	Japan, 1960-1991	He found evidence for displacement effect with oil crises.
Nomura (1995)	Gupta's	Log-linear / Time Series	OLS	Japan, 1960-1991	There is a positive association between the growth in government expenditures and Gross Domestic Product growth.
Ashworth (1994)	Musgrave's	Log-linear / Time Series	Co-integration	Mexico, 1950-1988	Growth in government size has negative effects on economic growth.
Hayo (1994)	Musgrave's	Log-linear / Time Series	Co-integration	Mexico, 1950-1980	Growth in government size has negative effects on economic growth.
Hsieh and Lai (1994)	All versions	Log-linear / Time Series	Causality test	G-7 countries, 1885-1987	There is evidence of causality, but government expenditure had a marginal effect on growth.
Murthy (1994)	Musgrave's	Log-linear / Time Series	Co-integration	Mexico, 1950-1980 1950-1988	There is a positive relation between government expenditures and GDP
Oxley (1994)	Goffman's, Musgrave's	Log-linear / Time Series	Co-integration	Britain, 1870-1913	There is a positive relation between government expenditures and GDP
Courakis, <i>et al.</i> (1993)	P&W's	Log-linear / Time Series	OLS	Greece and Portugal, 1958-1985	There is no evidence supporting Wagner's hypothesis that there was a long-run relationship between total government expenditure and GDP

Henrekson (1993)	Musgrave's	Log-linear / Time Series	Co-integration	Sweden, 1861-1990	Growth in government size has negative effects on economic growth.
Murthy (1993)	Musgrave's	Log-linear / Time Series	Co-integration	Mexico, 1950-1980	There is a positive long-run relationship between the variables under investigation.
Bairam (1992)	P&W's	Log-linear / Time Series	OLS	OECD countries, 1950-1985	Mixed results
Huang and Tang (1992)	Musgrave's	Log-linear / Time Series	Co-integration & Causality test	Taiwan, 1951-1987	There is a feedback between GNP and Government expenditure, as well as government revenue and GNP, but there is only one-way causality running from government revenue to government expenditure.
Ram (1992)	P&W's	Time Series	OLS	OECD, 1950-1985	There is a positive relation between government expenditures and GDP.
Gyles (1991)	Gupta's	domain Transfer function model	OLS	UK, 1946-1985	There is a positive relation between government expenditures and GDP
Nagarajan and Spears (1990)	Musgrave's	Log-linear / Time Series	OLS	Mexico, 1950-1980	There is a positive relation between government expenditures and GDP
Kolluri, B. R., <i>et al.</i> (1989)	Man's	Log-linear / Time Series	OLS	6 countries, 1960-1985	There is a positive relation between government expenditures and GDP
Abizadeh, S. and Yousefi (1988)	All versions	Log-linear / Time Series	OLS	USA, 1950-1984	Growth in government size has positive effects on economic growth.
Ram (1987)	Musgrave's, P&W	Log-linear / Time Series	OLS	115 countries, 1950-1980	Mixed results
Vatter and Walker (1986)	P&W's	Proportional measures-Time Series	OLS	USA, 1929-1979	There is a positive relation between government expenditures and GDP
Abizadeh, S. and Gray (1985)	Musgrave's	Linear	OLS	53 developing countries, 1963-1979	There is a decline in the government expenditure ratio with increased economic development.
Singh and Sahni (1984)	Gupta's	Linear-Time Series	OLS	India, 1950-1981	Growth in government size has negative effects on economic growth.
Mann (1980)	Man's	Log-linear / Time Series	OLS	Mexico, 1913-1958	Mixed results
Ganti and Kolluri (1979)	Gupta's	Log-linear / Time Series	OLS	USA, 1929-1971	GDP as opposed to using total GDP per capita, and the income elasticity of demand was approximately two.

Peacock & Wiseman (1979)	P&W's	“while government expenditure has clearly grown over the period as a whole for all countries for which adequate statistics are available, the time pattern of growth is less regular than, and quite different from, the corresponding pattern of growth in the size of community output” (Peacock and Wiseman 1961, p. 25).			
Diamond (1977)	P&W's	Log-linear	Chow test		He found evidence for displacement effect as a structural break.
Goffman and Mahar (1971)	Goffman's	Proportional measures	OLS	6 nations, 1940-1965	Growth in government size has negative effects on economic growth.

3.8. CONCLUSION

This chapter aims to survey the relevant theories and models used in explaining growth of government. In doing so, and in providing a foundation for the rest of the chapters, the economic rationale for the government is discussed within various schools of thought.

In the models and theories section, Wagner's Law, Peacock & Wiseman's the Displacement Effect and the Keynesian Approach presented as part of the macroeconomy related models. These are three important theoretical observations on the growth of public expenditure. The most popular one is Wagner's Law (1883) which states that the increased economic activity leads to increases in government activities, which in turn result in the increase of public expenditure. This involves the view that public expenditure can be seen as a result, or as an internal factor of the growth of the economy. Wagner's (1883) law of expanding state activity has since been empirically experienced by a number of states.

In another attempt, Peacock and Wiseman formulated the displacement effect by analysing the time pattern of public expenditure. They found that public expenditure increases during war or periods of social crisis. Moreover, when the war ends, or crisis is resolved, public expenditure falls, but not to the level at the start of the emergency, with the conclusion that growth in public expenditure occurs in stages associated with stress.

The advent of the Keynesian approach had a profound and pervasive influence on economists and governments for many generations. Keynes (1933) found that the government should use public expenditure as a tool of economic policy to manage a national economy and counteract unemployment. His view found ready acceptance in a world that had not yet recovered from the Great Depression. The Keynesian suggestion was to inject money into the economic system. In other words, through careful consideration of the macroeconomic theories of government growth comparable to Wagner's law, there appears to be a positive causal relationship flowing from government expenditure to economic growth.

There are also the microeconomic models. These have included Baumol's differential of production growth, Bacon, and the Eltis model. The results of supply side analysis are defined by the fact that a traditional demand function for public goods always under-predicts the growth of the public sector. An analysis of public consumption drawing support from Baumol's productivity inequality model shows that this growth has exceeded the rate implied by the mutual price and income effects. The developed model is used to explain both the relative and absolute growth of various measures of public expenditure. Bacon and Eltis exaggerate the impact of increases in local government employment on the national economy, because they do not allow

for cheaper part-time and female labour, and they do not allow for the fact that a proportion of the extra salaries and wages is paid back to government in taxes and rates.

This chapter, furthermore, presented four different models of the Public Choice Approach to the growth of government. These included 'bureaucracy and the growth of government', 'interest groups and the growth of government', 'median voter and redistributors government model', and 'fiscal illusion'.

Government expenditure increases when government allocates additional expenditure to interest groups in order to get support from the groups. The expenditure may be on the level of government redirecting resources from the general public interest to the interest group at the expense of the general society. It gives us an opportunity to argue that as interest groups increase in society, government expenditure may increase.

The median-voter model, together with the stylised fact regarding the relationship between median and mean income, suggests that the public sector will be overly concerned with redistribution, but may provide too few goods and services. While these consequences from the median-voter models are suggestive, they do not give the basis for a general theory of public expenditure determination.

In an attempt to understand government growth through political economy approach, rentier state approach is also considered, which is particularly relevant in the case of Saudi Arabia.

After identifying the main theoretical models, the next chapter focuses on the technical aspect of government expenditures by discussing the definitional and measurement issues.

CHAPTER 4

UNDERSTANDING GOVERNMENT EXPENDITURES: CONCEPTS, DEFINITIONS AND MEASUREMENT

4.1. INTRODUCTION

The economies of most of the countries in recent decades have been characterized by growth in the government intervention and government expenditure expansion. Thus, due to various reasons whether welfare state understanding or whether due to late developmentalism, the public sector has played an important role in the economic policy making in many countries. Wagner (1890) pointed out that the share of public sector output in the context of economic development leads the economy to grow due to increased demand for public goods and services. Consequently, in the process of economic development, government spending is expected to grow. In this process, government expenditure is an endogenous factor and an outcome, not a principle cause of growth (Wagner, 1883).

It should be noted that the nature and mechanism of government and public expenditures differs from one country to another, as the multidimensional nature of government intervention in the economy means that the intervention could include various government activities (Gemmell, 1993). While most of the studies focused solely on size as one might expect, Abizadeh and Basilevsky (1990:3) states that “the choice of different variables would lead to a different size with distinct meaning and implications.”

This chapter, hence, presents aspects of public sector measurement accompanied by an explanation of the concept of the public sector, or government. This is followed by an explanation of the remarkable complexity of the indicators used to measure the size of the public sector.

4.2. THE CONFUSION OF CONCEPTS

It is useful to give some thought to the importance and growth of government, as it requires clear understanding as to what we need to measure. Peters and Heisler (1983:179) aims to make it easy when they state that the measurement should be “in forms in which data are more readily available, in quantifiable form, ubiquitous units, and preferably in internal form.”

A critical examination of the literature indicates that a number of concepts are used to describe the government expenditure growth or government growth including 'state', 'public sector', 'public expenditure', 'government expenditure', *etc.* It is clear that there is a difference in these concepts and components in terms of size or area, and there is a difference in the identification of these components from one country to another. According to Atkinson and Stiglitz (1980:16) "there are several different ways in which the size of the public sector can be measured, and there is a substantial element of arbitrariness in any definition."

The following sections thus aim to shed some light unto these concepts in better understanding the subject matter.

4.2.1. The Concept of the State

In an attempt to understand that conceptual issues, the first concept is to explore is the 'state', which is defined as the group of people associated by certain bonds governed by a system of designated authority (Trotman and Dickenson, 1996). Beyond, this legal notion of the state, 'state' is also used commonly as word in political systems. It means a relationship between geography and citizen, but also a contract between individual citizens and their governance. According to Peters and Heisler (1983), the 'state' refers to the relationships between a government and its citizens.

The notion and definition of state has changed through the centuries and therefore its impact and conceptualisation and its boundaries in economic life has changed from one political setting to another. While communist economies experiences a heavy presence of state in the economy, liberal capitalist economies aimed at small state in terms of state intervention in the economy.

The nature of the political setting also defined the functions of the state in different ways over the centuries. While classical political economists recognised the classical functions of the state from defence to security and legal system to governance, modern welfare state understanding as the blend of socialism and capitalism resulted in state providing public and merit good most of the time free of charge to its citizen in developing a nation state.

In terms of the size of the government as the subject matter of this research, measuring the size of the state is a more complicated and sophisticated matter; as the definition states modern state is large and complex phenomenon with various economic implications. As the constitutional economics states, then the measurement of the government

expenditures should start with the economic implications of the various agencies of central authority and other agencies. However, such definitions and attempts are difficult to conduct.

4.2.2. The Concept of Government

Government is part of the composition of the state and has the authority to make and enforce laws and regulations. Peters and Heisler (1983:184) define government as “the institution that imparts direction to society by various means of collective decision-making and exercises the state’s authority on a daily basis.” As the one of the oldest political institutions in the world, whose mission can be summarised as four fundamental tasks (World Bank, 1997):

- (i) Establishing a foundation of law;
- (ii) Investing in basic social services and infrastructure;
- (iii) Protecting the vulnerable;
- (iv) Protecting the environment.

Government thus constitutes the functional and executive articulation of the state in economic and political system, which has particular implications for public expenditures. However, being a different concept, it is terrible difficult to establish the demarcation lines between the state and the government as far as public expenditures are concerned.

4.2.3. The Concept of Public Sector

There are different ways to explain the concept of the public sector. Since public sector refers to public expenditures and incomes policies in the form of fiscal policy, Brown and Jackson (1990:4) pointed out that “public sector economics are, therefore, the study of the effect of public expenditure and taxes on the economy”. In other words, since the concern in this study is related to the size of government involvement in the economy, the concept of the public sector includes not only public expenditure but also the taxes and the creation of public debt.

It should be noted that the multiplicity of public enterprises in each state can make the process of measuring public sector as a difficult process (Trotman and Dickenson, 1996). In supporting this, Aulichet *al.* (2001:1) notes that the concept of the public sector “represents the activities undertaken almost solely by government agencies, and is accomplished by a mix of departments of state, statutory authorities and other legal and political institutions.”

Since this chapter aims to identify the differences between different categories related to the subject matter, it should be stated that there are differences between the concepts of

‘government; and ‘public sector’. Saunders and Klau (1985) provide a comparison in aspects of ‘government’ and ‘public sector’. Accordingly, public sector includes expenditures, taxes and government activities including the following:

- General government transfers in goods and services.
- Transfers of income and capital.
- Economic activities of public enterprises and industries.
- Tax expenditures.
- Public sector lands.
- Loans to private-sector borrowers.

It should be stated that the development of the public sector in developing countries is similar to a large extent in that most economic activities of the state tend to focus on the construction of infrastructure, provision of social services, the regulation of foreign trade, and regulation of the production of goods and services (Beck, 1982).

In concluding, in the study of government expenditure, the nature of the measurement and how this relates to different levels of the measurement categories and entities has to be identified in order to develop a consistent result.

4.3. THE PROBLEMS IN THE MEASUREMENT OF THE GOVERNMENT

All government spending and income, such as public employment and tax revenues, are included in measuring the public sector as managed by a particular government. However, as Larkey *et al.*(1981:163) states "it is not obvious what should be counted as ‘public’ and what as ‘private’, nor is it obvious how the measures ought to be expressed e.g. in per capita terms, share of GNP, GDP or NNP. The choices depend on both the research purposes as well as on technical considerations."

For the identified aim of this study, total government expenditures as stated in the consolidated budget are taken as the main measurement. In other words, the money actually passing through budget rather than ways in which governments can affect the economy through regulation and other devices is considered in this study.

Despite clarifying the nature of public expenditures, the issue of how to represent the measurement of the public expenditures is an issue, which is discussed in the following sections.

4.3.1. Absolute or Relative Size

Using the absolute size of government expenditures may not do justice in understanding the growing size of the public expenditures. Musgrave (1978) and Brown and Jackson (1990) also stated that the absolute size of the public sector is a somewhat meaningless concept. Rather, the *relative* size of the public sector is the typical measurement utilised as a ratio or comparison between the estimates or the absolute measurement of the public sector variables and the total national income. The measure of the relative size of the public sector is not especially easy, as a ratio it involves public sector measure to total national income, and hence the definitions of these variables are still disputed (Cullis and Jones, 1987).

4.3.2. Nominal or Real Values

Inflation has been a common economic terms and phenomenon for all the nations. One of the main sources of the growth in public revenues and in public expenditures is clearly inflation. The other related aspect is the relative price effect which should be taken into account even when estimating the size by real values. As Cullis and Jones (1987) acknowledged, we need to distinguish changes in relative prices of public services and their volume, since prices of publicly and privately provided goods do not go up at the same rate.

Musgrave (1978:16) indicates that in fiscal policy measures, "a correction must be made for inflation" and add that the observation on nominal levels would not be meaningful. On the other hand, as indicated by Abizadeh and Basilevsky (1990:356), Buchanan and Flowers and Lewis-Beck and Rice favoured the nominal values, "reflect changes in prices along with changes in government's real share in economic activity.... (while giving) a better indication of government's scope and power vis-a-vis the national economy."

4.3.3. The Implications of Deflating Public Expenditures by the GDP Deflator.

As indicated by Monacelli and Perotti, (2006:8) "instead of the GDP deflator, one could have used government expenditures own deflator to express government spending in real terms. Most models predict that this action should have a positive effect on employment and output: in a neoclassical model, this happens via a negative wealth effect on the private sector, whereas in a 'Keynesian model', via a higher demand. Yet, if we used government expenditures own deflator, real government expenditure would not change and we would not

be able to capture. Only by employing the GDP deflator will we be able to capture the positive effect on output."

4.3.3. The Measurement of Relative Size

Since the absolute size of the public sector does not render an efficient understanding, at least measurements can be developed to examine the direction and magnitude of change in the public sector expenditures over time.

The measurement of the relative size of the public sector to total national income is important in interpreting and understanding the expansion of the public sector over time. As noted previously, one of the most important of such relative size is the proportional share of the government in the economy, such as the proportion of government expenditure in GNP. Nevertheless, there are some difficulties regarding the measurement of the magnitude of this ratio as well.

4.3.3.1. The Public Revenues Ratio

One of the indicators that deserve attention in estimating the size of the government sector is public revenue. An increase in government spending or any other part of these financial aspects must bear in mind the growth of public revenues.

Public revenue is the sum of money levied by the state from various sources to finance public expenditures to meet public needs. Public revenue is the financial means to enable the state to implement public policy. There are several types of income associated with increasing functions of the state and its intervention in economic and social affairs.

Revenues obtained from taxes are the largest sources of public revenue, and these taxes require a strong private sector, which is obliged to pay them. The comparison between the total taxes from the private sector renders an indication of the resources of governments (Gillie, 1979).

There are many types of public revenue, the bulk of which is received from three main sources. There are the fees for the provision of public services, followed by income tax, and the third source, consists of credit and loans, domestic and external. With the increased functions of the state, the variety of public revenues have changed and diversified.

The public revenue ratio to GDP provides an understanding on the extractive power of the state and hence its power on the economy.

4.3.3.2. The Ratio of Public Expenditure

Considering that Wagner (1883) pointed out that rapid growth in public expenditure is most often a function of a quickly growing national income, relative size of public expenditure in terms of ratio of public expenditures to national income can be considered as an efficient measure. In supporting this, Jackson (1980:330) noted that “the relative size of the public sector can be simply expressed as a ratio of some absolute measure of public expenditure divided by a national income aggregate such as GNP.”

The ratio of public expenditure involves a number of aspects beginning with numerators measures (Cullis and Jones, 1987), which are depicted in Table 4.1:

- (i) The sum of the local and central government expenditure plus the capital of corporations (nationalised industries) and tax expenditure;
- (ii) The sum of the local and central government expenditure plus the capital of corporations (nationalised industries), but after excluding tax expenditure, despite the opinion of some that it could be added to the miscellaneous expenses of governmental activities;
- (iii) The sum of the local and central government expenditure, but after the excluding the capital of corporations (nationalised industries) and their tax expenditure, as they are largely autonomous;
- (iv) It is similar to (iii) but excludes all expenditure on financial assets, because it reflects the role of local and central government as financial intermediaries;
- (v) Local and central government expenditure, as this figure assumes that local and central government expenditure is less than the total spending on financial assets;
- (vi) The latest measurement of the ratio of government spending, where there are attributes and the ratio of value-added, which requires the input dimensions of the procurement market of the expenses, detailed in this way and not as part of the spending output.

Table 4.1: The Numerators Measures

	Measure	Including	Excluding
1	Local and central government expenditure	Nationalized Industries + Tax Expenditure	-----
2	Local and central government expenditure	Nationalized Industries	Tax Expenditure
3	Local and central government expenditure	-----	Nationalized Industries + Tax Expenditure
4	Local and central government expenditure	-----	All expenditures on financial assets
5	Local and central government expenditure		
6	Local and central government expenditure	Value – Added	

Source: Cullis and Jones, (1987:69-71)

Somewhat differently, Cullis and Jones (1987) present eight possible denominators, with six possible numerators, to measure the ratio of government expenditure, and thus the size of government. They have noted that “While the estimate of government expenditure is larger when selecting the appropriate numerator, the public sector appears larger by choosing the smallest denominator” (Cullis and Jones, 1987:71). Cullis and Jones (1987:70), therefore, state that “it is very easy to see how very differing views on the size and growth of public sector are readily sustained.”

In identifying the difficulties in the use of such a ratio, Jackson (1980) pointed out that the nationalised industries consume public sector resources, and thus make this ratio smaller than the potential ratio. Therefore, Brown and Jackson (1990) suggest an expanded the ratio as the total of public sector consumption, the total of public sector investment, government subsidies, transfers of capital, interest on debt, and finally the net loans to the private sector.

Transfer expenditures are considered as another complicated part of the numerator of such a ratio; as some suggests that transfer expenditures being non-economic by nature should not be included. However, rightly so, Buchanan and Flowers, as quoted by Abizadeh and Basilevsky (1990:356) noted that “Transfer is as much a real cost as direct outlays for tanks, planes and paperclips. When estimating the real cost of government, the distinction between

productive and transfer expenditure is not useful.” Hence, in order to have a full picture of the public sector growth, transfer expenditures should also be considered.

In all cases, change and differences in analysis and political outlook, analysts have the opportunity to choose any measurement of the ratio of government spending which proves useful. However, it is nonetheless quite clear that ‘any measure or standard for measuring the change in the size of government is arbitrary’ (Jackson, 1980).

The important point is that the nature of the ratio of government expenditure should be identified. For example, Eltis (1983:79) stressed that “the expression has been made in terms of conventional national income accounts; these are, however, not the ideal tools to use in an examination of the influence of growth in public expenditure on the development of the economy.” Thus, national income may be the best indicator of economic output to be used as a denominator. Consequently, GDP can be employed as the national income aggregate statistics in the estimation of the public expenditure ratio.

It should be noted that an additional problem with regard to figures or estimates of national income is related to the estimation of the national income whether at factor costs and market prices. Brown and Jackson (1990) indicated that the composition and construction of public revenue in different countries will affect the GDP at market prices, even if they have a similar figure at factor prices. Because of this, they preferred GDP at factor cost as the most appropriate measurement in estimating the size of public sector through public expenditure ratio.

Among the national income measures, Musgrave (1978:18) found that the GNP is the favoured standard for measurement of the size of government, noting that his “inclination is to use GNP at market price where purchases or the total expenditure ratio are concerned, while using net national product at factor cost when dealing with transfer payments or direct taxes.” However, Oshima (1957: 388) argued that “valuation of products at factor cost is not suitable, since it excludes indirect taxes which are a large part of the share of government.” Furthermore, Eltis (1983:79) suggests that “(if our goal is to measure) real resources available for investment and consumption by the companies and workers of the private sector, then the provision of un-marketed public services should be excluded from the output because they can be neither invested nor privately consumed.”

As a result, even if GDP is chosen as a denominator, six different ways of interpreting it still is an issue. However, varying percentage of increased in nominator and denominator

also results in unrepresentative ratio. For instance, if the government expenditure increase is lower than the increase in the GDP or GNP, then the ratio will be lower comparatively.

4.3.4. Public Employment Measurement

Government employment can be employed as another significant indicator of the size of government. However, one of the main difficulties found by some economists and researchers in the field of government employment is the difficulty in separating the employment interaction and participation between the government and the private sector, making the expense of workers in the public sector rather difficult to estimate.

Rose (1983:165) asserted that “defining employees in terms of attributes of the employer rather than of the employee, avoids many problems.” The difficulty that may arise is the development of a classification for some functions not falling within any job classification, and so may not come within the scope of the classification and thus become invisible in the process of calculation. This can also give rise to confusion, as stated by Rose (1983:165) “if public employment is disaggregated into functions components, the same government can be changing in different directions at the same time.”

There are also some jobs in the public sector, with a low level of minimum income, which are filled by individuals who do not receive a fixed wage per day, which must also be taken into account when calculating the total number of jobs in this sector.

In short, using public employment as a measure can pose certain other difficulties in terms of defining and understanding the various aspects of public sector employment.

4.3.5. The Measurement of the Off-Budget Activities of Government

It is clear that the assessment method and system of government expenditures must take into account a more inclusive society, where it is necessary to identify the various government activities and what activities add to the total government budget. The governments use their power to issue legal and regulatory legislation to create revenues and expenditures areas beyond the formal budget of the country, which are called off-budget funds. The creations of such funds are sometimes due to political manoeuvre and sometime due to the policies of the governments to circumvent rigid bureaucratic regimes.

The study of the phenomenon of off-budget activities of government is far removed from the study of traditional data. Measures to deal with the public sector should include the

additional activities of governments, such as off-budget activities (Saunders and Klau, 1985). The previous standards, such as tax expenditure, subsidies, and regulation rejected the traditional measurement of the public sector, especially when there is difficulty in finding estimates of the size of government. These off-budget activities are essential, constituting a large alternative area in the performance of direct actions of the government budget.

In the case of Saudi Arabia, in particular funds in the form of sovereign wealth funds (SWF) should be considered as an important part of government's increasing expenditure power, through which government has been undertaking investments and generating wealth beyond the state's budget. Considering that these SWFs have managed to pool very large amount of funds available to be used by the state mainly for economic and financial investments, their inclusion in the calculation of growth of government should include these funds. Since they are investment oriented and owned and regulated by the state, it is important that they should be considered as part of the government expenditure structure.

4.3.6. Tax Expenditure

Tax Expenditure is a term used to describe various allowances, which are used to reduce the burden of income tax. Tax expenditure has been seen as analogous to direct payments, or subsidies provided by the government.

Tax is a financial burden received by the state according to the rules of parliamentary mandates, to provide the necessary funds to cover the expenses of the state so as to achieve the economic goals of the community, that is, the economic objectives to encourage savings and investment, to encourage some sectors of the economy, to reduce the negative effects of economic stagnation and to curb inflationary pressures.

In addition, the government directs spending without resources and without the actual collection or compilation of some types of expenditure in the tax system, which means it is government-supported or subsidised, as in the case of tax expenditure. According to Saunders and Klau (1985:79) "Tax expenditure can take various forms, such as exemptions from tax, tax allowances, tax credits or special tax reliefs designed to assist particular groups or activities." In addition, the amount obtained by the government as income tax will be low and without any charge to the direct expenditure.

Cullis and Jones (1987:75) note that "Attempts have been made to quantify some of those implicit expenditures", which includes tax expenditures. Gillie (1979:15) argued that

“There is no systematic estimate of revenue foregone because of these reliefs, but it seems likely to be substantial.”

With the purpose of measuring the implicit expenditure, as argued by Saunders and Klau (1985:79) “there should be agreement on what represents the normal tax structure, since tax expenditure is usually defined as departures from the generally accepted normal or benchmark tax structure.”

It should be noted that the traditional estimation methods of measurement, although familiar, can only be approximate estimates of tax and tax expenditure. There are additional problems, and in spite of the fact that increasing numbers of states find a separate system to measure these taxes, they are exceptional budgets, as noted by Saunders and Klau (1985).

A quick review of the government expenditure growth literature, however, does not show any study using tax expenditures as a measure of government growth.

4.3.7. Laws and Regulations

Laws and regulations are an important aspect in the organisation of public sector activities and, therefore, the size of government. The policies that work in the regulatory process in general have a significant impact and provide clear guidance in the private and public sectors. As noted by Rose (1983:161), “laws are a unique resource of government”, as through laws are regulations, government defines resources allocation in the society as well as tax burden of the citizens. Therefore, their role goes beyond the extent to which they can be a real alternative to direct government spending or tax measures (Brown and Jackson, 1990), as laws and regulations have explained the importance of advancing the public sector and performance; also, the efficiency and effectiveness of the public sector have a significant impact on the public and the private sectors.

There are some problems related to measuring and determining the kind and quality of laws and regulations, but that is a catalyst for regeneration and development. Moreover, laws and regulations need to adapt to a lasting interest for economic growth and development of all activities of the state, but are not limited only to mere work provided for under these laws; they must take into account the rapid development of economic concepts over time. Saunders and Klau (1985:85) argue that “attempts to estimate the economic costs of regulatory activity in monetary terms are satisfactory”, for which various benchmarks can be developed. For instance, if the objective is to measure the regulatory process in the economy, there are

descriptions of the rate of economic activity and industrial activity, and the purpose of the laws and regulations in this case is to control prices or production (Saunders and Klau, 1985).

It is important, however, to state that measuring the government size through laws and regulations can be a difficult process, as locating their impact can only be through micro-data related method which can be terribly time consuming.

4.4. CONCLUSION

This chapter attempted to discuss many of the benchmarks and indicators to highlight confusion over the concepts related to the increasing government size, but also the difficulties in using a particular measurement for this end.

The difference between the government and the public sector is important, as we mentioned earlier that the government authorities in their legislative capacity produce laws for all sectors and in their executive capacity follow up and manage these laws. Therefore, a proportion of the public sector in the economy in general and in the determination of the size of government is of particularly great importance.

As mentioned above, there is considerable controversy among economists and politicians regarding the description of the growth of public sector over time. In overcoming all these controversy and difficulties, the optimum policy is that “the choice of estimate should be tailored to the issue in question” (Cullis and Jones, 1987:76).

In identifying the confusion over various estimates, table 4.2 depicts the public expenditure ratios for the UK for 1977 and 1987 as estimated by Gillie (1979) and Brown and Jackson (1990) respectively.

Table 4.2: UK Public Expenditure Ratios 1977 and 1987

UK – General government total expenditure ratios 1977 and 1987			
Measure	(Gillie, 1979) – 1977		(Brown and Jackson, 1990) – 1987
The national income %	60.5%		54.3%
GDP	Factor cost	53.6%	47.7%
GNP		53.1%	47.0%
GDP	Market prices	47.8%	40.5%
GNP		47.4%	40.0%

Table 4.2 presents a variety of measures, and compares UK Public Expenditure ratios between 1977 and 1987. Gillie (1979) and Brown and Jackson (1990:158) estimated that “the differences between the ratios depends upon whether it is the national or the domestic product that was used in the denominator and whether the denominator was measured at market prices or factor cost”. As can be seen, the lowest ratio in Gillie’s calculation is 47.4% and the highest is 53.6%, while these are 40% and 54.3% in Brown and Jackson. Thus, rather important differences are produced by each of the calculation method, which refers to the confusion discussed in this chapter. It should be noted that in rendering a political economy understanding, Gillie (1979:7) argue that “you can[not] push public expenditures significantly above 60% and maintain the values of a plural society with adequate freedom of choice.”

In addition, in locating the direct impact of government expenditures in the sense of economic expenditures of the government, table 4.3 presents UK general government expenditure ratios on goods and services for 1977 and 1987 as estimated by Gillie (1979) and Brown and Jackson (1990) respectively.

Table 4.3: UK Public Expenditure Ratios on Goods and Services 1977 and 1987

Measure	(Gillie, 1979) – 1977		(Brown and Jackson, 1990) - 1987
The national income %	33.0%		49.1%
GDP	Factor cost	29.3%	24.4%
GNP		29.0%	22.9%
GDP	Market prices	26.2%	26.2%
GNP		25.9%	24.4%

As can be seen in table 4.3., variation in the estimates of the measures of government growth is a reality. In Brown and Jackson (1990) estimates it runs from 24.4% to 49.1% indicating a huge difference in the results produced by different measurement methods.

Regardless of the various figures and theories that support the concepts discussed in the above-mentioned figures, each one provides a different way of looking at the reality in terms of the size of government and its role in the economy, as the definition and choices of measurement remain arbitrary rather being objective.

CHAPTER 5

GOVERNMENT EXPENDITURES AND ECONOMIC DEVELOPMENT IN SAUDI ARABIA: DEVELOPMENTS AND TRENDS

5.1. INTRODUCTION

Past decades have witnessed the increased role of government in most of the states in the world and in particular in the developing countries through increased measures, procedures, and engagement in social services but also economic activities including transfer expenditures. These indeed have had fiscal and monetary policy implications and also raised questions about the efficiency of government expenditures against the so-called achieved objectives.

In particular with the Keynesian policies, but also due to the realism of the need of development in the developing countries, the government expenditures have been assigned an important role to provide the development needs of the respective countries. Considering that the presently developing countries have not had much private capital to finance economic development, having the extensive involvement of state in economic development was not a matter of choice but an imperative.

The role of government and the growth in the size of the public sector have been the focus of attention for several decades. As mentioned in Chapter 3, Wagner initiated the initial theorisation of the relationship between government expenditure and the GDP through what is now known as Wagner's Law, who, at least in the case of Germany and the Europe observed and evidenced a strong relationship between public expenditures and economic expansion in the form of economic growth but also economic development.

In the case of Saudi Arabia, the economic growth and development of the country has been possible mainly due to the government expenditures which is financed through revenues raised from the oil sector, which still dominates the economy, as Saudi Arabia is a late developmentalist country without any private capital in its formation. Albatel (2003:77), therefore, argues that "the government has an important influence on the economy through its expenditure on activities including its overall development strategy financed mostly by revenues generated from oil, under which many of the economic and social services used to be provided to the citizens with less than their cost".

The Kingdom of Saudi Arabia, hence, has used oil income to fund its economic growth and development but also the country has been developing strategies to diversify sources of

income in the economy away from oil dependence. It should be noted that adaptation to the global economy and the presence of the oil, since the first five-year development plan (1970-1975) until the seventh development plan (2000-2005) has seen sector diversification become a more and more prominent objective.

The steps the Kingdom of Saudi Arabia has taken towards the goal of economic growth and development involve building the infrastructure necessary to create, stimulate and activate economic growth in non-oil sectors (Development Plan, 1970-2009). In order to organise an efficient economic development in the country, Saudi Arabia still prepares development plans. Planning automatically goes into every effort directed by state policy, but often it is effective only when there is a meaningful effort for the overall development of the society's well-being. It is clear that development activities have achieved much through the development of plans and obstacles have retreated after each period.

Since this study aims to examine the stated nexus between government expenditures and economic growth in the case of Saudi Arabia, the purpose of this chapter is to outline development and trends in economic performance, government expenditures by referring to the stages of economic development in Saudi Arabia envisioned from the beginning. The economic policies pursued are classified into periods, organised into general trends in GNP/GDP with goals in human development indexed in reference to five-year plans.

It should be noted that the components of public sector/government expenditure in Saudi Arabia have been presented in chapter four and contextualise development objectives for Saudi Arabia.

5.2. STAGES OF ECONOMIC GROWTH IN SAUDI ARABIA

In general, the development plans that have been implemented since 1970 succeeded in increasing economic growth and employment, and have identified areas of infrastructures and institutions to be financed by government expenditures for supporting the economic activities and developments, modernisation and transfer of advanced technology. The development plans have also succeeded in achieving good levels of education and health and social services, which are clearly reflected in the improvement of living standards for all citizens.

5.2.1. Stages of Economic Development

An overview of the economic performance in table 5.1 evidences that the value of the GDP at current prices has increased rapidly, from 22,565 million SAR in 1970 to 1,154,504 million SAR in 2005 and to 1,629,998 million SAR in 2010, at an average annual growth rate of about 16.7% indicating an state the percentage. This is an indication of the level of economic achievement made so far (table 5.1).

In terms of development planning, first phase covers the first three development plans, from 1970 to 1984. Growth rate of the economy from 1970 to 1984 stood at an annual average of 23.2% during this first phase of economic growth planning (table 5.1).

The second phase of development planning covers the development plans from the fourth to the seventh planning, for the period from 1985 to 2005. The growth rate of the economy was lower during the period, at an average annual rate of 4.0% (table 5.1), lower than the previous stage.

The strategic objectives for long-term development have been formed since the beginning of preparations for the first development plan in 1970. During the past three decades, planning for the development in the Kingdom of Saudi Arabia has been on-going, through harmonisation of all the conditions of interim plans to work flexibly and efficiently towards the next phase with changes and updates, and through preparation of the subsequent plan which comes next. The average growth rate during the seven development plans in the first year of the Eight Development Plan (2005) stood at approximately 11.9% (table 5.1), while total exports of 9.7 billion SAR in 1970 climbed to 678.5 billion SAR in 2005 indicating another successful performance thanks to oil exporting.

The First Development Plan for 1970-1974 called for a growth rate of real capacity of 9.8% of the GDP with an annual average (table 5.1). The actual growth rate achieved was 18.7% which more than doubled annual average growth during that period. This was achieved due to high oil revenues as a result of oil shock in 1973, and high oil revenues helped to increase government spending to the actual 75.5 billion SAR, which according to the plan was expected to be only 41.3 billion SAR, or an increase of 82.8% over government income and spending projected (First Development Plan, 1970). This initial development is enough to understand the crucial role played by oil in the development of the country.

The Second Development Plan covered the period of 1975-1979 and demonstrated even further increase in government spending, and consequently spending amounted to about 684.4 billion SAR, an increase that was more than nine times that of government spending in the first

development plan. This increase in government spending was result of the GDP increases due to high oil prices and, hence revenues. However, during this period, high rates of real growth (around 8.9%) in non-oil production sectors were also achieved as a result of initial economic diversification attempt. During the same period, the growth of the oil sector was about 2.4%. To further contextualise this, during the Second Development Plan, the public sector achieved that average 5.5% real growth rates, while the private sector achieved real average annual growth of 10.1%(Ministry of Economy and Planning, 2006).

During the Third Development Plan from 1980-1984, the planned level of government spending was 1200 billion SAR, which was nearly twice the value of actual spending during the Second Development Plan (684.4 billion SAR). By the end of the Third Development Plan, actual spending amounted to 1,213 billion SAR due to a sharp increase in government revenues.

During that period, the private sector increased its share in gross fixed capital formation at current prices from 37.7 billion SAR in 1980 to 50.2 billion SAR in 1984 (Third Development Plan, 1980), which culminated into further economic growth despite the fact the world economies were experiencing recession due to the high oil prices. During this period, support for the development of private sector continued with the application of economic policies aimed at expansion of incentives given to stimulate private investment in the country.

The Fourth Development Plan, 1985-1989, saw a significant decrease in oil revenues due to the impact of lower prices on the global market, reflected in a relative decline in total government expenditure, to 802.1 billion SAR, contrasting with the planned 1,000 billion SAR. This decline was a reflection of the reduction on the rates of GDP growth, as the average rate of annual growth with real prices during the plan was only 0.6% annually during the plan period (Fourth Development Plan, 1985). However, development efforts of the time were able to continue supporting the economic sectors, notably agriculture, which achieved high-growth rates, resulting in 13.4% annual average growth. Similarly, the petrochemical industries sector achieved a quantum leap in the rate of annual growth with averaged growth rate of 47.3%. During this period, the annual growth in oil and natural gas was 4.4% (Ministry of Economy and Planning, 2006).

The Fourth Development Plan focused on a new strategic direction aiming at increasing the profit generated by the oil and natural gas sector. It also became clear that there was a need to focus on the petrochemical industry, which has a great a comparative advantage for Saudi Arabia with high value-added. The plan also saw positive signs in terms of increase in the average annual rate of growth of non-oil exports, which rose from 18% in the Third Development Plan

to 29.3% during the Fourth Development Plan. Domestic production increased during the period, particularly of consumer goods, and in agriculture there was increased substitution of imports of these commodities. The period saw also increases in the share of private-sector investment to the total, representing about 54.9% during the fourth plan, reaching 239.2 billion SAR at constant prices of 1999(Fourth Development Plan, 1985).

In the Fifth Development Plan, 1990-1994, the average annual growth rates of the GDP were about 4.4%, during which period the private sector achieved average annual growth of 2.1%. The rates of growth in the oil and government sectors were 9.7% and 2.9% respectively. The high rate of growth of the oil sector and the increase in oil revenues increased the economic growth significantly in the period in question(Fifth Development Plan, 1990).

The total value of private investments amounted to 283.6 billion SAR, growing at an average annual rate of 5.9%, while government investments amounted to 178.8 billion SAR. The value of total government spending amounted to 1078.1 billion SAR mainly due to the increase in oil revenues. During the plan period, the balance of trade realised a surplus averaging around 15.6% of GDP (Ministry of Economy and Planning, 2006).

The Sixth Development Plan stretching from 1995 to 1999 focused on strategic directions in human resource development. The plan prioritised human resource development, job creation, and implementation of a policy of privatisation, which also took a strategic direction of increasing the proportion of the contribution of non-oil sectors. In the diversification of economy towards private sector certain achievements were demonstrated, as in real GDP at 1999, the private sector's role was 51.1% in 1969 which increased to 69.7% in 1999 (Sixth Development Plan, 1995).The Plan also concentrated on increasing the share of non-oil sectors in real GDP from 51.2% in 1969 to 69.7% in 1999, the last year of the Sixth Development Plan.

The Seventh Development Plan 2000-2004 set the goals of economic growth in most non-oil sectors at an annual rate of 5.1% (table 5.1), and encouraged the private sector to achieve a growth rate of an average annual rate of 5%. The investment sector was growing at an annual average of 3.6% (Saudi Arabian Ministry of Economy and Planning, 2006). The non-oil sectors during the Seventh Plan had real annual growth averaging about 3.9%; the percentage contribution of these sectors to the GDP rose to 16.7% in 2004 (table 5.1).

The private sector had achieved a real growth rate averaging 4.3% during the Seventh Development Plan period, 2000–2004. Its percentage share of GDP increased from 52.4% in 1999 to 54.6% in 2004, compared to the plan target of 55.4%. During the same period, private

investment grew at an average annual rate of 3.5% compared to the plan target of 8.3% (Seventh Development Plan, 2006). In addition, the seventh plan aimed at improving the current account balance of payments deficit which was -3.0% of GDP in 1999 to a surplus of 6.9% of GDP in 2004.

The developments and trends in various dimensions of GDP are depicted in table 5.1 and Figure 5.1, Figure 5.2, Figure 5.3 and Figure 5.4. As can be seen in Table 5.1; Figure 5.1, Figure 5.2, Figure 5.3 and Figure 5.4, in 1970 the growth of GDP was about 11.9, which increased to 200.4 in 1974 and decreased to 16.7 in 2010. Also, the growth rate of oil sector was about 16.9%, which increased to 280.3 in 1974 and decreased to 25% in 2010. On the other hand, the growth rate of non-oil sector was about 7.8 in 1970, which increased to 66.2 in 1974. In 2010 the growth rate of non-oil sector decreased to 9.1.

Table 5.1: Annual Changes in Gross Domestic Product by Sectors

Year	GDP	GDP Growth Rate	Oil Sector	Oil Sector Growth Rate	Non-Oil Sector	Non-Oil Sector Growth rate
1970	22,565	11.9	8,689	16.9	13,590	7.8
1971	30,497	35.2	15,186	63.9	14,938	10.1
1972	38,259	25.5	20,447	31.8	17,372	17.4
1973	53,531	40.3	30,687	48.0	22,361	29.0
1974	159,719	200.3	119,166	280.3	40,111	66.2
1975	163,670	2.4	97,568	-17.0	65,588	76.8
1976	225,347	37.6	128,476	31.6	95,963	48.3
1977	260,960	15.6	136,869	6.3	122,680	30.5
1978	272,267	4.2	120,368	-11.0	150,072	24.0
1979	375,469	38.0	187,745	56.0	185,564	21.3
1980	546,603	45.7	323,048	67.8	221,021	19.3
1981	622,175	13.9	355,736	11.5	263,802	17.9
1982	524,197	-15.9	235,975	-33.1	284,974	11.5
1983	445,210	-15.2	143,865	-36.0	297,668	4.6
1984	420,388	-5.7	120,305	-13.8	296,110	-1.0
1985	376,319	-10.6	88,286	-25.7	284,123	-2.8
1986	322,021	-14.4	61,262	-30.4	257,514	-8.2
1987	320,932	-0.4	63,390	8.4	254,089	-3.0
1988	330,518	1.5	61,711	-2.6	260,571	2.9
1989	357,065	8.7	83,847	28.6	266,478	2.5
1990	437,334	22.8	138,650	60.9	291,684	7.9
1991	491,852	12.7	156,964	13.2	327,888	12.4
1992	510,458	3.4	174,942	11.3	326,416	-1.2
1993	494,906	-3.1	147,703	-14.9	337,926	4.7
1994	503,054	1.9	146,984	-0.3	347,781	3.1
1995	533,504	6.3	163,777	10.8	362,227	4.0
1996	590,748	10.6	200,321	20.6	381,552	5.1
1997	617,902	4.6	200,941	0.8	407,861	7.1
1998	546,648	-11.9	129,480	-33.0	407,155	0.9
1999	603,589	10.7	173,102	30.2	420,853	2.9
2000	706,656	17.4	259,847	45.3	437,159	3.3
2001	686,296	-2.6	227,607	-11.6	451,556	3.9
2002	707,067	3.0	234,206	3.1	465,474	3.0
2003	804,648	13.8	291,326	25.4	505,235	6.9
2004	939,426	16.7	393,519	28.4	537,069	8.5
2005	1,182,514	26.1	618,291	45.8	595,759	9.5
2006	1,335,581	13.0	720,664	16.6	603,892	9.0
2007	1,430,547	8.0	778,353	9.5	640,395	6.3
2008	1,522,500	23.8	801,232	37.1	708,545	7.5
2009	1,614,453	-21.8	824,110	-38.8	776,697	4.7
2010	1,629,998	16.7	827,561	25.0	788,348	9.1

Source: Ministry of Economy and Planning (2010)

Figure 5.1: The Growth in GDP

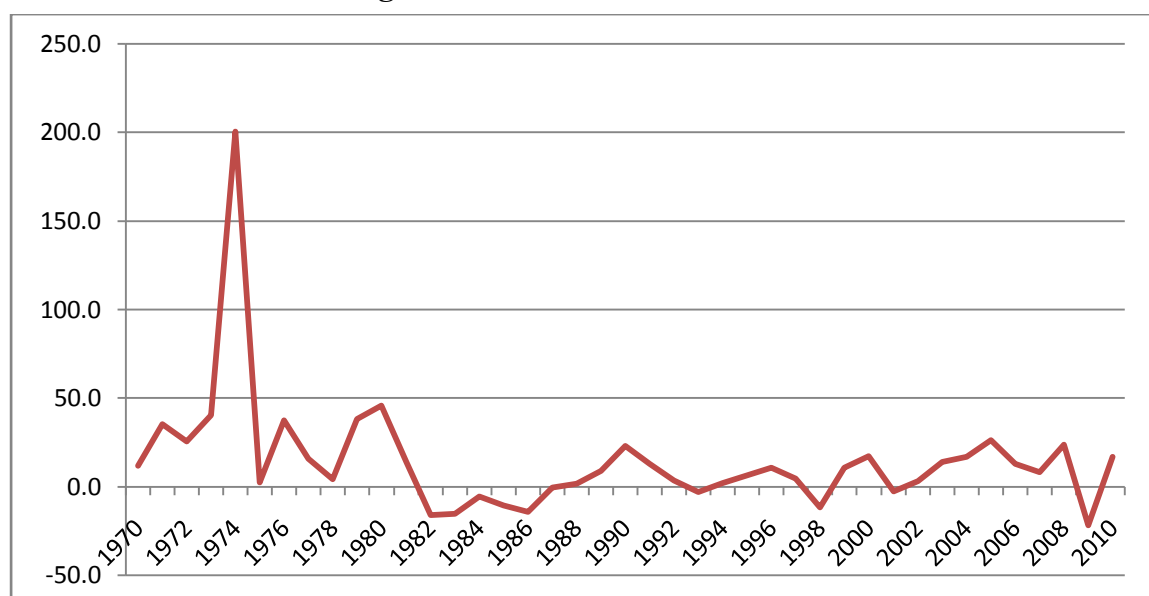


Figure 5.2: The Growth in Oil Sector

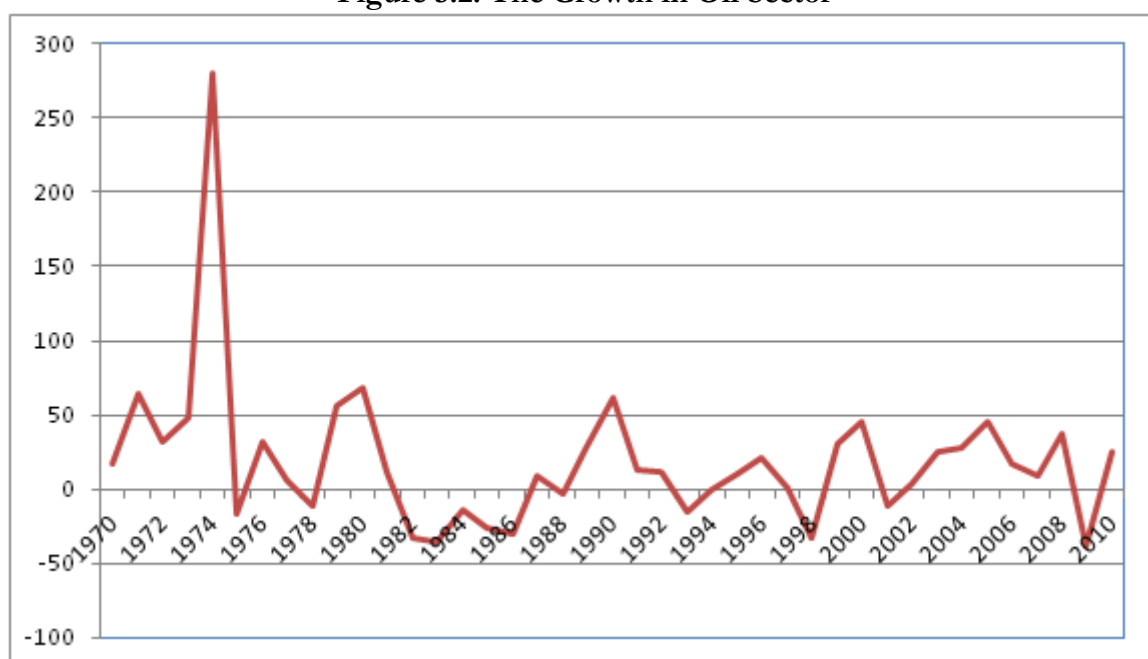


Figure 5.3: The Growth in Non-Oil Sector

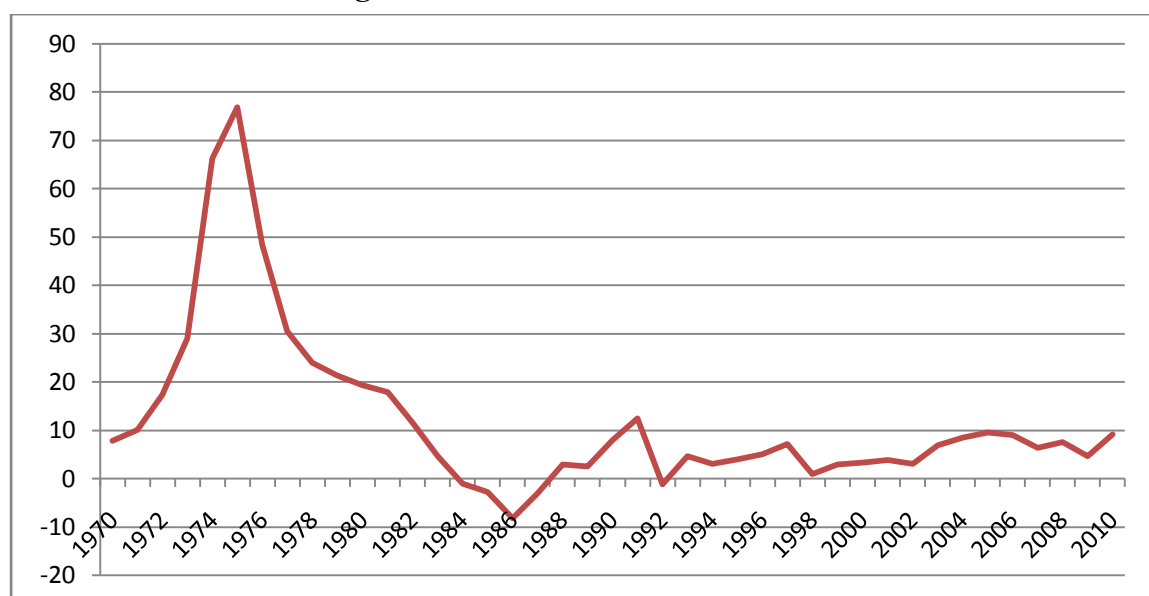
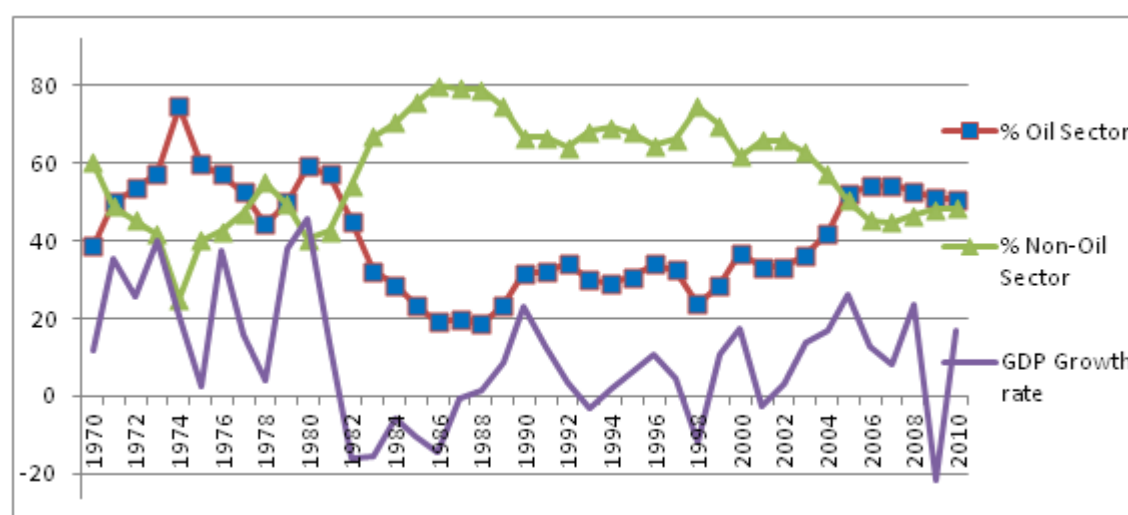


Figure 5.4: The Growth of Total GDP, Oil Sector and Non Oil Sector



In sum, in terms of the consequences of economic policies of the Development Plans, during the past development plans, including the first year of the ninth plan, the development efforts of government resulted in the achievement of several significant economic and developmental goals. These achievements were reflected in the increased rates of economic growth, job opportunities, and facilitated diversified economic activities and development of tangible and positive shifts in the economic structure. These accomplishments have manifested themselves in the increased role of the private sector in production and investment activity, and improved business conditions in the market economy, which were based on competition. For the same period, the effectiveness and significance of economic, fiscal, monetary, investment and

trade policies varied in line with the nature of the prevailing general conditions. For example, during the First and Second Development Plans (1970-1979), which concentrated on laying strong foundations for infrastructures, high public expenditure brought about the phenomenon of price inflation, which peaked to reach 31.2% in (1976) as well as increased numbers of foreign labour force personnel in the country. In the context, fiscal policy was adjusted in 1979 and 1980 when it was decided to stop increases in public expenditure.

It should be noted that government expenditure did, however, increase in the arena of public labour training and work began on application of Saudi policy with the commencement of the Fourth Development Plan's implementation process.

5.2.2. Human Development

While economic growth is related to the expanding capacity of the economy, economic development includes also human development, which, according to the endogenous growth theories, is an essential element of economic growth. Thus, development needs a focus beyond economic growth. While economic growth is essential in generating income, human development and well-being is also essential. With the recent changes in economic development understanding, human development is now considered as essential. In other words, real development is investment in human development, which in turn is society. In order to do this, there is a significant body of opinion calling for newly re-examined plans for the overall development of the state on the basis that such development plans are designed to, on an objective basis, demonstrate that human development is paramount and that the development of physical, economic and industrial infrastructures should emerge in concert with building a broad base of human development and well-being. Mostly, industrialised countries have been successful in invigorating their human development as well.

In reflecting the importance of human development as part of the development process, Human Development Index or HDI was developed by UNDP, which is depended primarily on a number of features of the human situation, the educational level, the social situation, family, and other characteristics of the other population. HDI has become a standard for economic development in terms of its human face, specifying that the new concept of development has a close relationship to education (figure 5.5).

The Sixth Development Plan in Saudi Arabia (1995-2000:265) highlighted the development of human resources as “the basic pillar for realising the objectives and aspirations of the development process. This is attributed to the fact that education and training raise the quality and productivity of the work force, as well as contributing to the cultural and personal

development of the individual”. In addition, The Sixth Development Plan (1995:41) “have placed great importance on human resources development through continuous advances in primary, intermediate, secondary, and higher education, as well as in technical education and vocational training.” This implies that the Saudi government has acknowledged the crucial importance of human development for economic development beyond economic growth. Therefore, “the result was a great increase in the productive employment of Saudi Arabian citizens and a steady upgrading of the skill levels and occupational achievements of the Saudi Arabian labour force” (The Sixth Development Plan, 1995: 41). In other words, education and training but also general welfare oriented social spending increased in the country immensely for the human well-being in the country. This is evidenced in Table 5.2 and Figure 5.5, which shows the financial allocations made to human resource development in Saudi Arabia over the years indicating immense increases over the years. As can be seen in table 5.2, resource allocation for human development was increased from the first plan to the eight plan that it was 7 billion SAR to 347.6 billion SAR; also, the human development index (HDI) increased year by year from 0.473 in the first plan to 0.748 in the eight plan.

Table 5.2: Financial Allocation for Human Resources (HR) Developments (in billion SR)

Sector	1 th Plan	2 nd Plan	3 rd Plan	4 th Plan	5 th Plan	6 th Plan	7 th Plan	8 th Plan
Resource Allocation for Human Development	7.0	80.0	129.9	135.0	164.6	216.6	276.9	347.6
HDI Index	0.473	0.502	0.556	0.620	0.643	0.690	0.732	0.748

Sources: Development Plans (1970-2010).

Figure 5.5: Human Development Index: Trends 1970 to 2010



The development plans in Saudi Arabia have focused on creating opportunities to increase economic growth and the financing of the development of public facilities and services to improve the living standards of citizens. This is in line with the global trends, as “the structure of government expenditure has thus shifted away from the provision of more traditional collective goods (defence, public administration and economic services) towards those associated with the growth of the welfare state (education, health and income maintenance), which provide benefits on an individual rather than a collective basis and where redistributive objectives are more important”, according to Saunders and Klau (1985:83).

5.2.3. Budgeted Expenditures in Saudi Arabia during the Development Plans.

The Saudi budget "classifies expenditures under four chapters. Chapters 1,2, and 3 include recurrent expenditures, and Chapter 4 includes capital expenditures. Within the first three chapters, the composition has been relatively stable. Typically between 40% and 50% of recurring expenditures is for Chapter 1, salaries. About 20% is allocated to Chapter 2, operating expenses. The remainder, under Chapter 3, is for other expenditures" (Johany *et.al*, 1986:65). The steps of "budget preparation" are following (Joharji, 2009:60-63):

1. Distribution of Budget guidelines by the Saudi Ministry of Finance.
2. Preparation of estimates by line ministries and department. The budget preparation process starts in the line ministries and departments during the fourth month of the fiscal year by forming an internal committee for budget preparation.
3. Submission of Budget proposal to the Ministry of Finance. The budget proposal is typically submitted the Saudi Ministry of Finance by the deadline set in the budget circular.
4. First sectoral negotiations of budget estimates. After receiving budget proposals starts the review procedures and negotiation process with each line ministry or department. The negotiation process normally takes place during August and September.
5. First Draft of Budget review by Deputy Minister of Finance.
6. Second sectoral negotiations of budget estimates. The purpose of this round is to set priorities for the government agencies' requests if further reduction in the budget estimates is needed.
7. Second Draft of Budget review by the Saudi Minister of Finance. Subsequently, a second draft is prepared for the review by the Minister of Finance.

8. Final Draft of Budget send to the council of the Ministries for submission and approval
9. Royal approval of the budget. In this step the final approval by the Prime Ministers, the King. This final stage normally takes place in the last two weeks of the fiscal year and concludes with the announcement of the new budget.

When oil prices began to rise in 1970, actual revenue began to be higher than expenditures. During the First development Plan (1970-1974), the high oil revenue helped to increase government expenditure to the actual 75.5 billion SAR. the authorities continued to present perfectly balanced budget. At the same time it was obvious that expenditures were lagging far behind budgeted expenditures. Even more marked was the divergence between expenditures and revenues. This situation was officially acknowledged in the first year of second development plan (1975) budget.

In the Second Development Plan (1975-1979), oil revenues increased much more slowly. At the same time , the economy was showing signs of overheating. Most obviously, the inflation rate increased dramatically. The government followed policies which are typically prescribed for such conditions by attempting to restrain expenditures. The government expenditure amounted to about 684.4 billion SAR, an increase that was more than nine times that of government expenditure in the first development plan.

During the Third Development Plan (1980-1984), the planned level of government expenditures was 1200 billion SAR, which was nearly twice the value of actual expenditures during the second development plan (684.4 billion SAR), both the price and quantity of oil rose dramatically. In 1983 it was possible to reduce expenditures sufficiently that a small surplus was realised, despite the substantial discrepancy between budget and actual revenue (Fourth Development Plan, 1980).

The Fourth Development Plan, 1985-1989, saw a significant decrease in oil revenues due to the impact of lower prices on the global market, reflected in a relative decline in total government expenditure, to 802.1 billion SAR, contrasting with the planned 1,000 billion SAR. This Plan focused on a new strategic direction aiming at increasing the profit generated by the oil and natural gas sector. It also became clear that there was a need to focus on the petrochemical industry, which has a great a comparative advantage for Saudi Arabia with high value-added. (Fourth Development Plan, 1985).

In the Fifth Development Plan, 1990-1994, the government reduced the government expenditure to faced the high expenditures in 1990 and 1991 regarding to Gulf War in those years. The value of total government spending amounted to 1078.1 billion SAR mainly due to

the increase in oil revenues. During the plan period, the balance of trade realised a surplus averaging around 15.6% of GDP (Ministry of Economy and Planning, 2006).

The Sixth Development Plan stretching from 1995 to 1999 focused on strategic directions in human resource development. The plan prioritised human resource development, job creation, and implementation of a policy of privatisation, which also took a strategic direction of increasing the proportion of the contribution of non-oil sectors (Sixth Development Plan, 1995).

The Seventh Development Plan (2000-2004), in this plan the government tried to intervene to push the economy by using the open economy policy.

The Eight Development Plan (2005-2009), the value of total government spending amounted to 1784,4 billion SAR mainly due to the increase in oil revenues. The height of public revenue in the first year of the Eighth Plan of Development was hitting 555 billion SAR (Ministry of Economy and Planning, 2008).

"All the Development plans identify the aim of government intervention as being to raise the standard of living and ensure equitable distribution of wealth and welfare of the citizenry. Within the framework of national development planning, several problems affecting urban areas were addressed" (Garba, 2004:13).

5.3. DEVELOPMENTS AND TRENDS IN GOVERNMENT EXPENDITURES IN SAUDI ARABIA

As mentioned, Saudi Arabia is a late developmentalist country, which has witnessed the heavy presence and intervention of state in the economy to finance economic growth and development through the revenues raised from oil export. Being a rentier state together with developmentalist state implies that government expenditures remains at the hearth of social and human development, and constitutes the main locomotive for economic stimulus in the private sector as well as conducting public sector economic activity. As a result, over the years, the government expenditures have shown an upward trend in the economy in terms of its magnitude and role.

In the case of the Saudi Arabian economy, thus, government expenditure increased in the budget of the Kingdom from 6.4 billion SAR in 1970 to 8.3 billion SAR in 1971 and multiplied by about five times in value by the end of the first development plan, up to 32 billion SAR in 1974. Government expenditure continued to rise to 216.4 billion SAR in 1984, in order to continue funding projects to improve education, health, housing, transportation, and communications. The expenditure helped to support the programmes and projects of human development and achievement of the growth objectives of the identified sectors in the plan. The

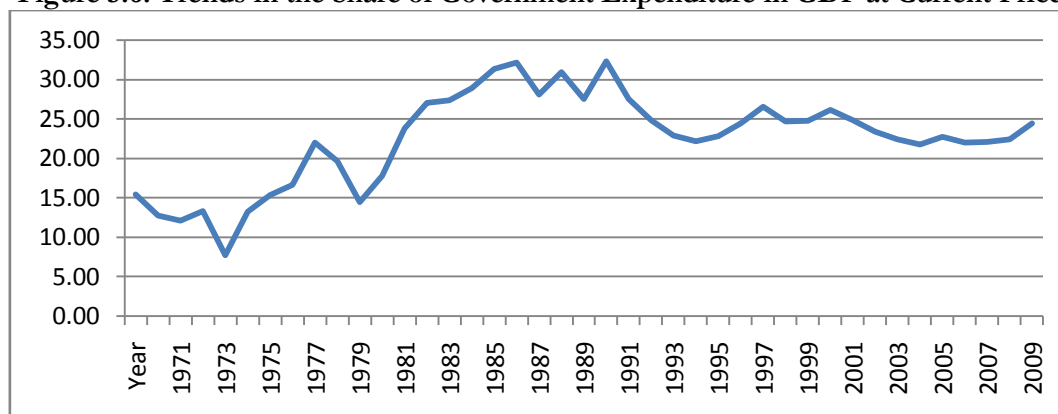
total average annual growth rate in public expenditure during the actual development plan first reached 49.5% and 42.5% and 2.8% in the second and third development plans. It was due to growth in public expenditure during the first three development plans that many of the goals of economic and social development were achieved, as the private capital accumulation was not there to initiate a national economy. As a result, the size of the national economy has increased and strengthened the capacities of new building of modern infrastructures in the key sectors of transportation, communications, education, health, housing, agriculture and industry due to government expenditures (Ministry of Economy and Planning, 2009).

As can be seen in Table 5.3, during the years of the Fourth Development plan, the decline in the growth of public expenditure observed, which dropped to an average annual capacity of 7.1%, which was the result of completion of most infrastructure projects during the period. The expenditure for 1985 was about 184 billion SAR and fell to 149.5 billion SAR in 1989. However, 1990 and 1991 showed an increase in public expenditure and a moderate decrease then rising in 2000 to 235.3 billion SAR and then increasing to 255.1 billion SAR in 2001 in the Seventh Development Plan. In 2003, public expenditure was about 257 billion SAR, increasing in 2004 to 285.2 billion SAR. Public spending continued to rise in the first year of the Eighth Development Plan, reaching 341 billion SAR (Ministry of Economy and Planning, 2008).

Regarding the components of public expenditure, the sector shares of total development expenditure during the first plan for the development was 34.1 billion SAR, equivalent to 45.2% of the total financial requirements of the plan. This rose to 347.2 billion SAR in the Second Development Plan (Figure 5.6), constituting 50.7% of the total amount of the approved budget. In the Third Development Plan, the value of the resources allocated to development was 625.2 billion SAR, or 51.6% of total public financial resources.

A better way of making meaning out of the increased government expenditures is the traditional use of ratio of government expenditures to GDP, which is calculated in table 5.3 and depicted in figure 5.6.

Figure 5.6: Trends in the Share of Government Expenditure in GDP at Current Price



As can be seen in Table 5.3 and Figure 5.6 depending on the growth of GDP and the growth rate of government expenditures, the ratio of government expenditures in GDP has not shown secular trends but rather followed ups-and-downs. As can be seen, in 1970 the ratio was about 15%, which decreased to 13.28% in 1973. However, with the enormous increases in the oil revenues in 1974 after the first oil shock and increased GDP, the share of government expenditures relatively fell to 8% despite showing an increase. However, increased oil revenues encouraged government to develop infrastructure projects in line with the increased GDP and therefore immediate adjustment witnessed in government expenditure with the share of government expenditure increasing to 13.24% in 1975, which reached a pick at about 22.04% in 1978. However, in 1980 it declined to its lowest level 14.42% since 1975 due to the global recession as a result of oil prices. Immediately, in 1981 the increasing trend in the share of government expenditures to GDP set in and reached to 27.04% in 1983. The declining trends in the ratio were observed from 1984 to 1989, falling to 30.95% in 1989 only with a pick in 1987 with 32.18%. As can be seen in (Table 5.3) and (Figure 5.6), the impact of government expenditures can immediately see in 1991 with the share of government expenditures in GDP increasing to 32.32% . Since then, a decreasing trend observed in the ratio of government expenditures to GDP until the present times. Immediately after the war, the ratio fell down to about 27.56% and then followed a decreasing trend to 22.43% in 2009. In such a declining trend, rather than government expenditures growth in absolute level declining, high increases in GDP as the denominator due to the oil price plays an important role.

As can be seen in table 5.3, the growth of public expenditures was 0.12 in 1971, which later increased to 0.38 in 1978. This trend continued, and in 1982 it was 0.13. In 1990 the decreasing trend in the growth of government expenditures was 0.09. Immediately after the war, the growth of government expenditure fell down to about - 0.06 in 1994 and then increasing trend to 0.1 in 2010

Table 5.3: Gross Domestic Product and Total Expenditure at Current Price

Year	Current GDP	The Growth of current GDP	Government Expenditure	Government Expenditure Growth	The Ratio of Government Expenditure/Current GDP
1970	22,565	11.9	3,478	—	0.15
1971	30,497	35.2	3,898	0.12	0.13
1972	38,259	25.5	4,621	0.185	0.12
1973	53,531	40.3	7,110	0.54	0.13
1974	159,719	200.3	12,321	0.73	0.08
1975	163,670	2.4	21,671	0.76	0.13
1976	225,347	37.6	34,513	0.59	0.15
1977	260,960	15.6	43,436	0.26	0.17
1978	272,267	4.2	60,020	0.38	0.22
1979	375,469	38.0	73,786	0.23	0.20
1980	546,603	45.7	78,841	0.07	0.14
1981	622,175	13.9	110,459	0.40	0.18
1982	524,197	-15.9	124,682	0.13	0.24
1983	445,210	-15.2	120,403	-0.03	0.27
1984	420,388	-5.7	115,159	-0.04	0.27
1985	376,319	-10.6	108,816	-0.06	0.29
1986	322,021	-14.4	101,057	-0.07	0.31
1987	320,932	-0.4	103,263	0.02	0.32
1988	330,518	1.5	92,823	-0.10	0.28
1989	357,065	8.7	110,498	0.19	0.31
1990	437,334	22.8	120,285	0.09	0.28
1991	491,852	12.7	158,980	0.32	0.32
1992	510,458	3.4	140,673	-0.11	0.28
1993	494,906	-3.1	122,879	-0.13	0.25
1994	503,054	1.9	115,102	-0.06	0.23
1995	533,504	6.3	118,483	0.03	0.22
1996	590,748	10.6	134,844	0.14	0.23
1997	617,902	4.6	151,043	0.12	0.24
1998	546,648	-11.9	144,993	-0.04	0.27
1999	603,589	10.7	148,892	0.03	0.25
2000	706,656	17.4	175,234	0.18	0.25
2001	686,296	-2.6	179,411	0.02	0.26
2002	707,067	3.0	175,438	-0.02	0.25
2003	804,648	13.8	188,398	0.07	0.23
2004	939,426	16.7	210,885	0.12	0.22
2005	1,182,514	26.1	257,190	0.22	0.22
2006	1,335,581	13.0	303,425	0.18	0.23
2007	1,430,547	8.0	314,768	0.04	0.22
2008	1,522,500	23.8	336,142	0.07	0.22
2009	1,614,453	-21.8	362,063	0.08	0.22
2010	1,629,998	16.7	398,352	0.10	0.24

Source: Ministry of Economy and Planning, (2010)

With respect to real GDP, table 5.4 depending on the growth of GDP and the growth rate of government expenditures, the ratio of government expenditures in GDP has not shown secular trends but rather followed ups-and-downs. As can be seen, in 1970 the ratio was about 13%, which decreased to 10% in 1973. However, with the enormous increases in the oil revenues in 1974 after the first oil shock and increased GDP, the share of government expenditures relatively increased to 13% despite showing an increase. However, increased oil revenues encouraged government to develop infrastructure projects in line with the increased GDP and therefore immediate adjustment witnessed in government expenditure with the share of government expenditure increasing to 18% in 1975, which reached a pick at about 24% in 1978. However, in 1980 it increased but slowly to 25% since 1975 due to the global recession as a result of oil prices. Immediately, in 1981 the increasing trend in the share of government expenditures to GDP set in and reached to 39% in 1983. The declining trends in the ratio were observed from 1984 to 1989, falling to 29% in 1988 only with a pick in 1987 with 36%. As can be seen in (Table 5.4) and , the impact of government expenditures can immediately see in 1991 with the share of government expenditures in GDP decreasing to 29%. Since then, a decreasing trend observed in the ratio of government expenditures to GDP until the present times. Immediately after the war, the ratio increased to about 31% and then followed a increasing trend to 37% in 2009.

The growth of public expenditures was 18.5% in 1971, which later increased to 33.5% in 1973. This trend continued, and in 1977 it was 8%. In 1990 the decreasing trend in the growth of government expenditures was -2.5%. Immediately after the war, the growth of government expenditure increased to about 1.9% in 1994 and then increasing trend to 1% in 2010 (Table 5.4).

Table 5.4: Gross Domestic Product and Government Expenditure at Constant Price (1999=100)

Year	Real GDP	The Growth of Real GDP	Real Government Expenditure	Real Government Expenditure Growth	The Ratio of Real Government Expenditure/Real GDP
1970	174,469	11.35	22	--	0.13
1971	203,960	16.90	24	18.5	0.12
1972	245,494	20.36	25	1.9	0.10
1973	301,154	22.67	30	33.5	0.10
1974	369,207	22.60	48	14.5	0.13
1975	3,307 37	1.11	66	5.4	0.18
1976	417,894	11.94	78	29.5	0.19
1977	440,704	6.89	80	8.0	0.18
1978	442,273	-0.99	107	-2.3	0.24
1979	485,366	9.74	122	-4.0	0.25
1980	517,283	6.58	129	-6.1	0.25
1981	542,093	4.80	167	-4.2	0.31
1982	485,570	-10.43	180	-1.3	0.37
1983	447,440	-7.85	176	-12.4	0.39
1984	433,793	-3.27	169	15.2	0.39
1985	408,474	-5.50	159	-4.2	0.39
1986	428,792	4.85	152	16.5	0.36
1987	412,670	-3.76	150	-0.4	0.36
1988	446,608	8.22	131	-15.6	0.29
1989	446,887	0.06	151	-7.2	0.34
1990	484,106	8.33	145	-2.5	0.30
1991	588,170	9.10	169	16.7	0.29
1992	552,625	4.63	168	6.6	0.31
1993	552,769	0.03	142	18.5	0.26
1994	556,448	0.67	132	1.9	0.24
1995	557,566	0.20	128	33.5	0.23
1996	576,433	3.38	150	14.5	0.26
1997	591,370	2.59	160	5.4	0.27
1998	608,141	2.83	158	-1.1	0.26
1999	603,589	-0.75	154	-2.8	0.26
2000	632,951	4.86	185	20.8	0.29
2001	636,417	0.55	189	0.4	0.30
2002	636,230	0.13	187	0.9	0.30
2003	686,037	7.66	198	5.6	0.29
2004	722,173	5.27	221	11.4	0.31
2005	762,277	5.55	250	12.9	0.33
2006	766,348	3.16	280	12.0	0.37
2007	802,211	2.02	286	2.4	0.36
2008	836,133	4.23	304	6.0	0.36
2009	836,938	0.10	307	1.0	0.37
2010	875,707	4.64	310	1.0	0.35

Source: Ministry of Economy and Planning, (2010)

5.4. GENERAL TRENDS IN GOVERNMENT REVENUES

The development of the public sector in developing countries is to a large extent seen in terms of most economic activities of the state which tends to focus on the construction of infrastructures, the provision of social services, and the regulation of foreign trade, and the production of goods and services falling within the scope of the natural monopolies. This has been the case for Saudi Arabia as well, which is mainly due to the increased economic power and influence of oil-producing countries as a result of rises in oil revenues. In other words, the state is now involved in a larger set of economic activity and provides the structure of the national economic activity. However, it is important that the role of government revenues should be considered as an important determining factor of public expenditures in Saudi Arabia as well as in other countries. Due to the enormous increases in public revenues, Saudi Arabian government has managed to spend for the social and economic development of the economy.

The oil wealth was utilised by the Kingdom of Saudi Arabia since 1970s to provide the financing power for the government to invest in infrastructure and structural projects, and the establishment of institutions and public bodies to invest the resources of the state and its components, which are not available in the private sector.

The first and the second development plans were characterised by a significant increase in the general revenues under conditions on world oil markets and the increase in oil prices, with the value of the total state revenues rising from 7.9 billion SAR in 1970 to 100.1 billion SAR in 1974, to 211.2 billion SAR in 1979. The average annual growth in revenues during the first development plan was 77.6%, and reached 16.1% during the Second Development Plan. In the third plan, world oil markets witnessed the negative changes that led to a decline in oil revenues which fell by an average of -4.1% a year. Total income decreased from 348.1 billion in 1980 to 171.5 billion in 1984, and continued to decline during the years of the Fourth Development Plan, as public revenue amounted to 133.6 billion SAR in 1985, then fell to 114.6 billion SAR in 1989. There was an annual rate of decline of -7.7% during the plan period, and during the years of the Fifth Development Plan, public revenues rose at an average annual rate of 2.4%, and then continued to increase during the Sixth Development Plan at an annual average rate of 2.7%.

Income also recorded the highest increase since 1997 and amounted to 205.5 billion SAR, which soon fell to 147.5 billion SAR in 1999. It rose in 2000 to 258.1 billion SAR at the beginning of the Seventh Development Plan, a result of increased oil revenues, which amounted to 214.4 billion SAR. In 2001, general revenue increased to 228.2 billion SAR, of which 183.9 billion SAR were from oil revenues. In the fourth year of the Seventh Development Plan in 2003 public revenue amounted to about 293 billion SAR and the percentage from oil revenues by

78.8%. In the fifth year of the plan, 2004 revenue amounted to 392.3 billion SAR and the proportion from oil revenues by 84.1% (table 5.5).

The height of public revenue in the first year of the Eighth Plan of Development was hitting 555 billion SAR. With the increase in economic activity and expansion of the productive base and services in the country, there have been increases in the value of public revenue from other sources than oil (table 5.4); it has risen from 79.40 billion SAR in 1970 to about 171.50 billion SAR in 1984. It then started with some 392 billion SAR in 2004 and 564 billion SAR in the first year of the Eighth Development Plan. This is due to the fluctuations that have occurred in some items of income, such as customs revenue services, ports, airport charges and the sale of real estate and rent, which since 1984 has declined significantly (Ministry of Economy and Planning, 2008).

As can be seen in table 5.5, the growth of public revenue was 0.35 in 1971, which later decreased to 0.04 in 1978. This trend continued, and in 1982 it was -0.16. In 1990 the increasing trend in the growth of public revenue was 0.22. Immediately after the war, the growth of public revenue fell down to about - 0.03 in 2001, and then increasing trend to 0.01 in 2010.

Table 5.5: The Ratio of Public Revenue in GDP

Year	Public Revenue	GDP	The Growth of Public Revenue	Public Revenue/ GDP
1970	7940	22,565	—	0.35
1971	11120	30,497	0.35	0.36
1972	15368	38,259	0.25	0.40
1973	41705	53,531	0.40	0.78
1974	100103	159,719	1.98	0.62
1975	103384	163,670	0.02	0.63
1976	135957	225,347	0.38	0.60
1977	130659	260,960	0.16	0.50
1978	131505	272,267	0.04	0.48
1979	211196	375,469	0.38	0.56
1980	348100	546,603	0.46	0.64
1981	368006	622,175	0.14	0.59
1982	246182	524,197	-0.16	0.47
1983	206419	445,210	-0.15	0.46
1984	171509	420,388	-0.06	0.41
1985	133565	376,319	-0.10	0.35
1986	76498	322,021	-0.14	0.24
1987	103811	320,932	0.00	0.32
1988	84600	330,518	0.03	0.26
1989	114600	357,065	0.08	0.32
1990	114600	437,334	0.22	0.26
1991	316639	491,852	0.12	0.64
1992	169647	510,458	0.04	0.33
1993	141445	494,906	-0.03	0.29
1994	128991	503,054	0.02	0.26
1995	146500	533,504	0.06	0.27
1996	179085	590,748	0.11	0.30
1997	205500	617,902	0.05	0.33
1998	141608	546,648	-0.12	0.26
1999	147454	603,589	0.10	0.24
2000	258065	706,656	0.17	0.37
2001	228159	686,296	-0.03	0.33
2002	213000	707,067	0.03	0.30
2003	293000	804,648	0.14	0.36
2004	392291	939,426	0.17	0.42
2005	564335	1,182,514	0.26	0.48
2006	673682	1,335,581	0.13	0.50
2007	642800	1,430,547	0.07	0.45
2008	1100993	1,522,500	0.07	0.72
2009	509805	1,614,453	0.08	0.32
2010	559834	1,629,998	0.01	0.34

Source: Ministry of Economy and Planning, (2010)

5.5. GOVERNMENT SOCIAL EXPENDITURES

The beginning of the modernisation the Kingdom of Saudi Arabia was highlighted by the interest in the plans for human development, which is extremely important in the strategy for overall economic and social development. The size of the many efforts and resources that have made for the care and development of its citizens and improve living conditions reflect the achievements made in this area during the past decades.

Considering the efforts made during the years of the Seventh Development Plan, and the orientations of the Eighth Development Plan, this is an increasing concern. The development of the capacity of citizens to improve living conditions is the basis for the development efforts, and lives of individual citizens are considered as an instrument of development. Moreover, significant progress can be measured in human development efforts, not only by the standards of local historical comparison, but also by global standards, particularly those that have been presented in the Human Development Reports of the annual international United Nations Development Program (Ministry of Economy and Planning, 2006).

Development plans have made a qualitative leap in the levels of education, training, health and social care reflected in many of the following indicators, for which developments and trends (Table 5.6):

Table 5.6: Government Final Consumption Expenditure in Purchaser's Value

Year	GPS	DEF	EDU	HT	SSWS	HOU	OCSS	OT	Total Expenditure
1970	672	1,510	642	220	11	150	88	185	3,478
1971	754	1,692	719	246	13	169	98	207	3,898
1972	894	2,006	853	292	15	200	116	246	4,621
1973	1,375	3,086	1,312	449	23	307	179	378	7,110
1974	2,382	5,349	2,273	778	41	533	310	655	12,321
1975	4,190	9,407	3,998	1,369	71	937	545	1,153	21,671
1976	6,674	14,982	6,367	2,180	114	1,493	869	1,836	34,513
1977	8,399	18,855	8,013	2,743	143	1,878	1,093	2,310	43,436
1978	11,606	26,054	11,073	3,790	198	2,596	1,511	3,192	60,020
1979	14,267	32,030	13,612	4,660	243	3,191	1,857	3,925	73,786
1980	15,245	34,224	14,545	4,979	260	3,410	1,985	4,194	78,841
1981	21,359	47,949	20,378	6,976	364	4,777	2,780	5,875	110,459
1982	24,109	54,123	23,002	7,874	411	5,392	3,138	6,632	124,682
1983	23,282	52,266	22,213	7,604	397	5,207	3,031	6,404	120,403
1984	22,267	49,989	21,245	7,273	380	4,980	2,899	6,125	115,159
1985	21,041	47,236	20,075	6,872	359	4,706	2,739	5,788	108,816
1986	20,313	41,392	19,453	6,671	340	4,519	2,612	5,757	101,057
1987	20,718	41,739	19,643	6,926	349	4,491	2,725	6,672	103,263
1988	19,527	36,474	18,998	6,190	319	4,361	2,356	4,598	92,823
1989	24,769	42,325	23,582	7,241	320	5,276	2,351	4,634	110,498
1990	54,546	45,590	14,906	1,108	473	166	3,276	220	120,285
1991	42,282	59,195	33,826	10,317	677	1,691	4,228	6,764	158,980
1992	29,730	56,359	28,055	10,219	414	5,549	3,180	7,167	140,673
1993	24,984	51,296	27,693	7,587	400	4,687	2,899	3,333	122,879
1994	24,389	45,503	26,476	7,788	402	4,612	2,777	3,155	115,102
1995	25,765	46,018	27,233	8,233	533	4,721	3,018	2,962	118,483
1996	28,651	52,708	29,096	9,554	633	5,505	3,606	5,091	134,844
1997	31,725	59,661	32,293	10,838	823	6,081	4,107	5,516	151,043
1998	31,849	55,780	30,741	10,643	825	5,793	4,056	5,303	144,993
1999	30,546	42,285	45,362	16,921	583	7,210	4,439	1,546	148,892
2000	33,006	51,353	49,645	21,565	864	9,691	5,536	3,574	175,234
2001	34,584	51,516	49,730	22,271	857	10,283	5,643	4,527	179,411
2002	33,818	50,375	48,629	21,778	838	10,055	5,518	4,427	175,438
2003	36,316	54,096	52,221	23,387	900	10,798	5,926	4,754	188,398
2004	40,651	60,553	58,454	26,178	1,007	12,087	6,633	5,321	210,885
2005	55,871	63,949	69,429	30,503	1,149	12,215	7,461	16,613	257,190
2006	62,909	75,206	83,273	37,283	1,252	14,530	8,084	20,888	303,425
2007	68,902	80,157	81,279	39,086	1,465	15,685	9,406	18,788	314,768
2008	74,443	84,932	87,436	42,652	1,738	16,546	10,395	18,000	336,142
2009	82,324	86,551	92,891	46,772	2,515	18,743	12,567	19,700	362,063

Notes: GPS (General Public Services), DEF (Defence), EDU (Education), HT (Health), SSWS (Social Security and Welfare Services), HOU (Housing and Community), OCSS (Other Community and Social Services), OT (Other Purpose).

Source: Ministry of Economy and Planning, (2010)

5.5.1 Education Expenditures

There have been efforts and interest in development of education capacity in Saudi Arabia, characterised by the development of human resources with continuing increases in the number of schools and educational institutes and colleges for boys and girls, and the continuing rise in the number of graduates and of undergraduates at different stages of development.

The importance of planning for development lies clearly in the development of human resources - the basis of education - that give it a privileged position in terms of the objectives, strategies and development plans initiated in 1970. It has increased and sustained allocations to human resource development, especially after the establishment of a modern economy.

As can be seen in Table 5.5 and Figure 5.8, the state allocated 49,381 million SR in the budget estimates for 1990/1991 for spending on education and training which represents a 48.2% proportion of the total approved expenditure for the services sectors and Development (Figure 5.7).

Figure 5.7: The Expenditure of Education in Saudi Arabia

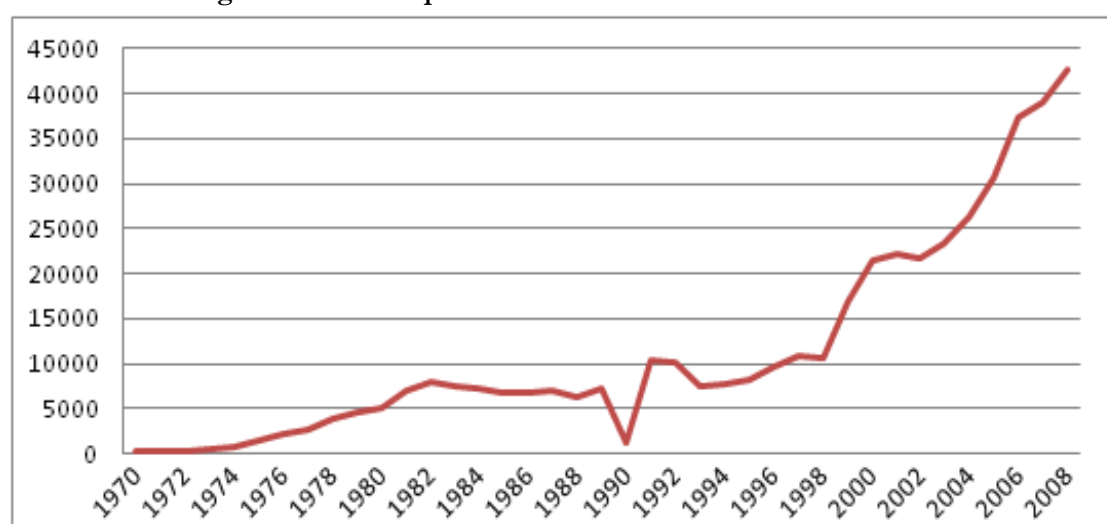


Figure 5.8: The Ratio of Education Expenditures in Government Expenditure in Saudi Arabia

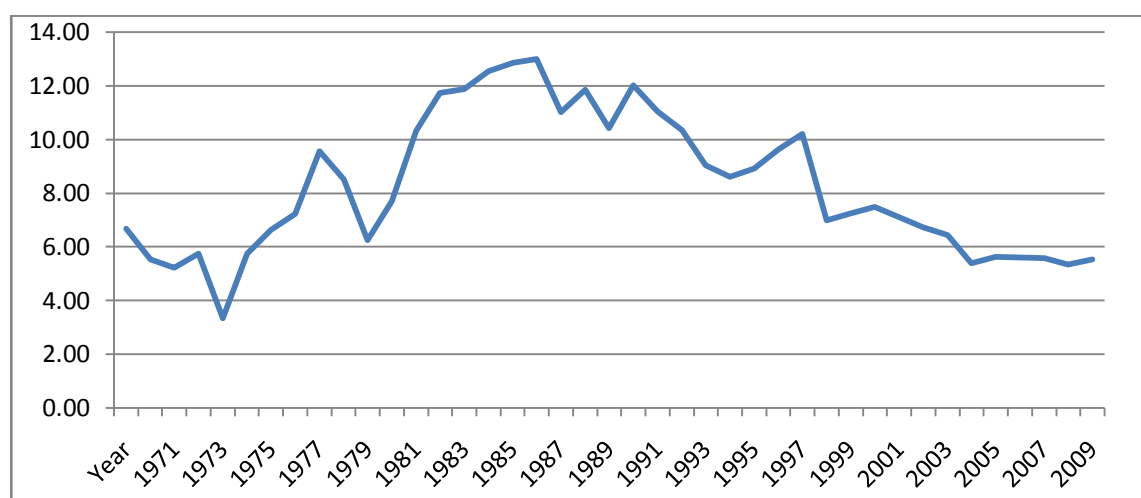
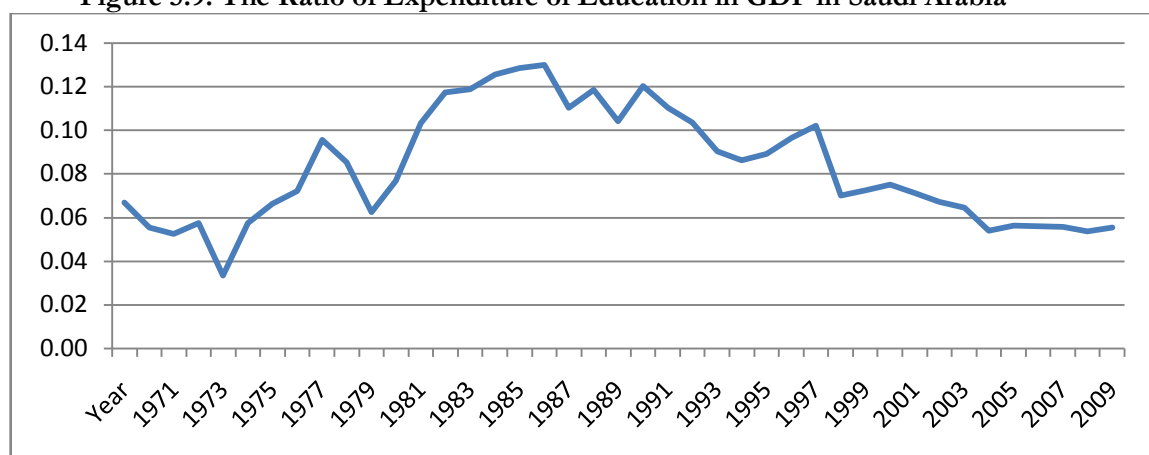


Figure 5.9: The Ratio of Expenditure of Education in GDP in Saudi Arabia



As can be seen in Table 5.7; Figure 5.8 and Figure 5.9, in 1970 the ratio of education expenditures in government expenditure was about 18.45%, which increased to 19.24% in 1986 and to 25.7% in 2010. Also, the ratio of education expenditures in GDP was about 8.24%, which increased to 6.12% in 2010. By 1996 it had fallen to 4.9 per cent education spending has remained relatively steady between 10 and 15 per cent for the past 40 years. In real terms, the average annual increase in education spending between 1970 and 2010 was 4.3 per cent. Figure 5.8) shows that education spending remained almost steadily between 1970 and 1985, after which it rose gradually until 1989, then fell very slightly, and has recently begun to increase at a faster rate from 2007 to 2010 (Figure 5.9). However, increased oil revenues encouraged government to develop the education sector in line with the increased GDP and therefore immediate adjustment witnessed in government expenditure (Table 5.6).

Table 5.7: The Ratio of Education Expenditures in Government Expenditure and GDP

Year	Educational Expenditures	Government Expenditure	GDP	Education Expenditures/ Government Expenditures	Educational Expenditures/ GDP
1970	642	3,478	22,565	18.45888	2.845114
1971	719	3,898	30,497	18.44536	2.357609
1972	853	4,621	38,259	18.45921	2.229541
1973	1,312	7,110	53,531	18.45288	2.450916
1974	2,273	12,321	159,719	18.44818	1.423124
1975	3,998	21,671	163,670	18.44862	2.44272
1976	6,367	34,513	225,347	18.44812	2.82542
1977	8,013	43,436	260,960	18.44783	3.070586
1978	11,073	60,020	272,267	18.44885	4.066964
1979	13,612	73,786	375,469	18.44794	3.625333
1980	14,545	78,841	546,603	18.44852	2.660981
1981	20,378	110,459	622,175	18.44847	3.275284
1982	23,002	124,682	524,197	18.44853	4.388045
1983	22,213	120,403	445,210	18.44888	4.989331
1984	21,245	115,159	420,388	18.44841	5.053665
1985	20,075	108,816	376,319	18.44857	5.33457
1986	19,453	101,057	322,021	19.24953	6.04091
1987	19,643	103,263	320,932	19.0223	6.120611
1988	18,998	92,823	330,518	20.46691	5.747947
1989	23,582	110,498	357,065	21.34156	6.6044
1990	14,906	120,285	437,334	12.39224	3.408379
1991	33,826	158,980	491,852	21.27689	6.877272
1992	28,055	140,673	510,458	19.94341	5.496045
1993	27,693	122,879	494,906	22.5368	5.595608
1994	26,476	115,102	503,054	23.00221	5.263053
1995	27,233	118,483	533,504	22.98473	5.104554
1996	29,096	134,844	590,748	21.57753	4.925281
1997	32,293	151,043	617,902	21.38	5.226233
1998	30,741	144,993	546,648	21.20171	5.623546
1999	45,362	148,892	603,589	30.46638	7.515379
2000	49,645	175,234	706,656	28.33069	7.025342
2001	49,730	179,411	686,296	27.71848	7.246145
2002	48,629	175,438	707,067	27.71862	6.877566
2003	52,221	188,398	804,648	27.71845	6.489919
2004	58,454	210,885	939,426	27.71842	6.22231
2005	69,429	257,190	1,182,514	26.99522	5.871305
2006	83,273	303,425	1,335,581	27.44434	6.234964
2007	81,279	314,768	1,430,547	25.82188	5.681673
2008	87,436	336,142	1,522,500	26.01163	5.548821
2009	92,891	362,063	1,614,453	25.65603	5.753713
2010	99,763	398,352	1,629,998	25.82504	6.120437

Source: Ministry of Economy and Planning, (2010)

5.5.2 Social Development and Health

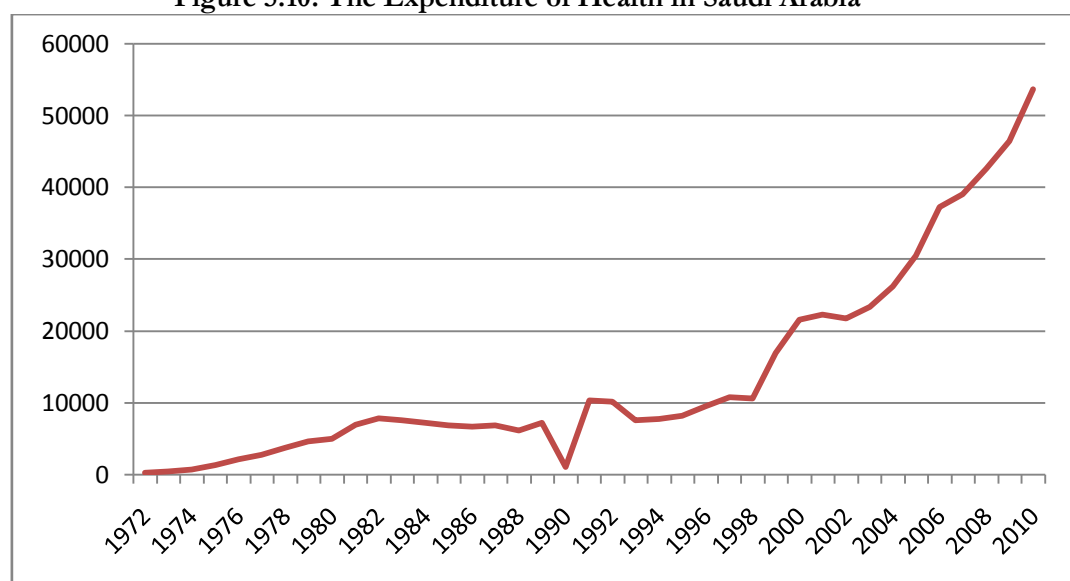
Social development and health are foci and consistently feature in all the six five-year plans implemented by the Saudi government.

As a result of the investment and higher support spending on development plans in the development of social services and health sector, there has been the allocation of 3.5 billion SAR to social development and health, which amounts to 10.3% of the total allocation plan (2005) (Table 5.8). In the following development plan there was a higher allocation to social development and health of 27.6 billion SAR, 8% of the total investments of the plan.

During the Third Development Plan, there was again a higher allocation to social development and health reaching 61.9 billion SAR, or 9.8% of the total. In addition, the Fourth Development Plan maintained the high rates of expenditure, accounting for funds allocated for social sector development, health, of 61.9 billion SAR, or 17.7% of the total. This means that the high share of these sectors rose to 50.7% of the total development in the Fourth Development Plan. Moreover, in the fifth plan, the government spending as the allocation of social development and health was 68 billion SAR, or 20% of the total, which would raise the share to 68% of the total investments for development. In the Sixth Development Plan, allocations increased for social development and health to 87.5 billion SAR, or 20.8% of the total and, therefore, these two sectors represent 72.3% of total investments allocated to the sectors of development in the plan. Appropriations increased with the Seventh Development Plan's marked increase of the financing of human development and founded the basic education sector and the financing of projects of social development and health, increasing again until it reached approximately 21.5%.

The secular increase in health expenditures can be associated with a steady population growth rate which is higher than population growth rates in most of the world, and the considerable rise in the cost of health services which is found not just in the Kingdom but also all over the world, all nations together paying an annual bill for health services estimated at two trillion dollars. The trends in the health expenditures in Saudi Arabia can be seen in Figure 5.10.

Figure 5.10: The Expenditure of Health in Saudi Arabia



As can be seen in Table 5.8; Figure 5.10 and Figure 5.11, in 1970 the ratio of health expenditures in government expenditure was about 6.32%, which increased to 19.24% in 1986 and to 25.7% in 2010. Also, the ratio of health expenditures in GDP was about 8.24%, which increased to 6.12% in 2010. The ratio of health spending in government expenditure remained almost steadily between 1970 and 1985, after which it rose gradually until 1996, then fell very slightly, and has recently begun to increase at a faster rate from 1999 to 2010.

Figure 5.11: The Ratio of Health Expenditures in Government Expenditure in Saudi Arabia

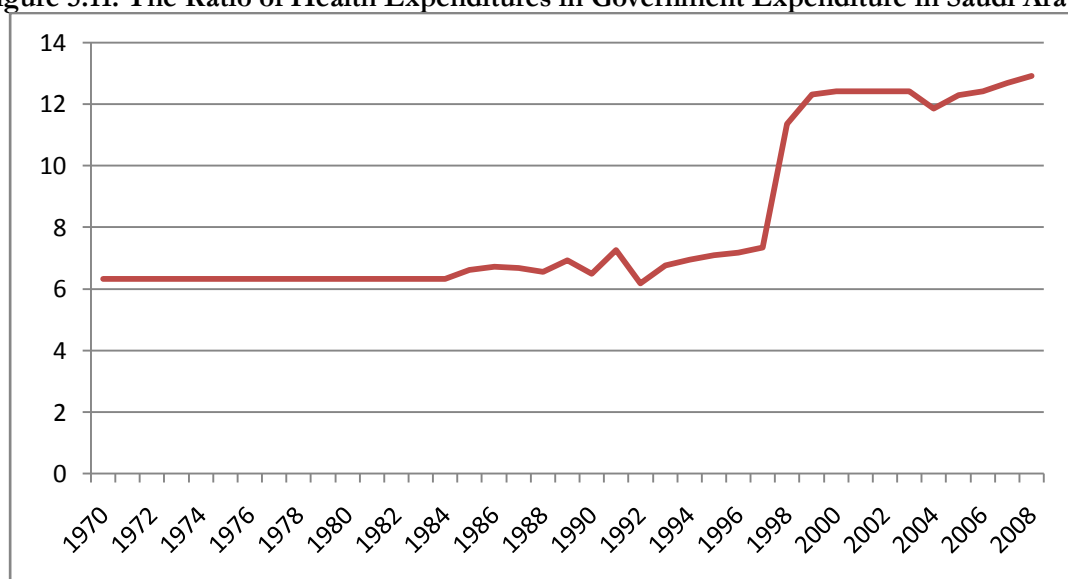


Figure 5.12: The Ratio of Health Expenditures in GDP

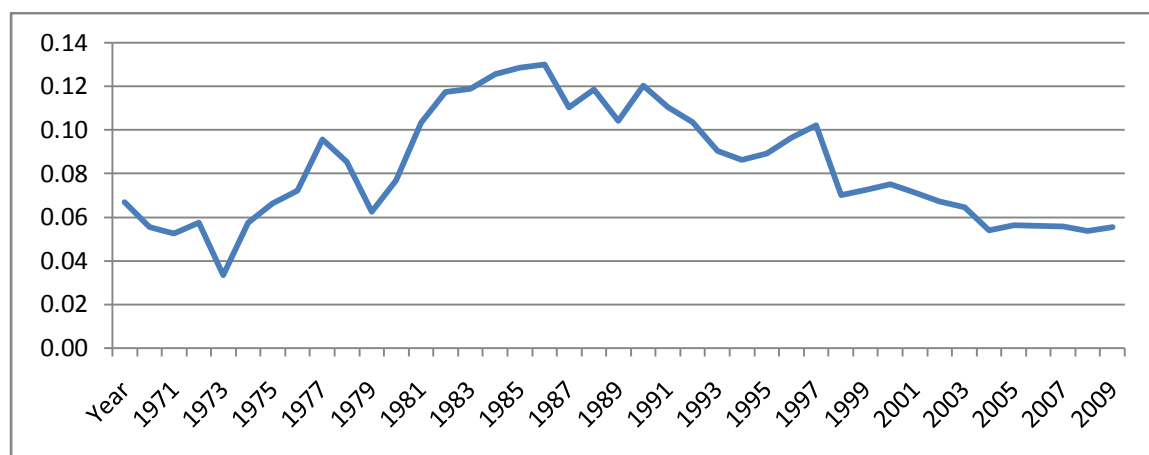


Table 5.8: Health Expenditures in Government Expenditure and GDP

Year	Health Expenditures	Government Expenditure	GDP	Health Expenditures/Government Expenditures	Health Expenditures/GDP
1970	220	3,478	22,565	6.325474	0.974961
1971	246	3,898	30,497	6.310929	0.806637
1972	292	4,621	38,259	6.318979	0.763219
1973	449	7,110	53,531	6.315049	0.838766
1974	778	12,321	159,719	6.314423	0.487105
1975	1,369	21,671	163,670	6.317198	0.836439
1976	2,180	34,513	225,347	6.31646	0.967397
1977	2,743	43,436	260,960	6.315038	1.051119
1978	3,790	60,020	272,267	6.314562	1.392016
1979	4,660	73,786	375,469	6.315561	1.241114
1980	4,979	78,841	546,603	6.315242	0.910899
1981	6,976	110,459	622,175	6.315465	1.121228
1982	7,874	124,682	524,197	6.315266	1.502107
1983	7,604	120,403	445,210	6.315457	1.707958
1984	7,273	115,159	420,388	6.315616	1.730068
1985	6,872	108,816	376,319	6.315248	1.82611
1986	6,671	101,057	322,021	6.601225	2.071604
1987	6,926	103,263	320,932	6.707146	2.15809
1988	6,190	92,823	330,518	6.668606	1.872818
1989	7,241	110,498	357,065	6.55306	2.027922
1990	1,108	120,285	437,334	6.921146	2.253353
1991	10,317	158,980	491,852	6.489496	2.097582
1992	10,219	140,673	510,458	7.264365	2.001928
1993	7,587	122,879	494,906	6.174367	1.533018
1994	7,788	115,102	503,054	6.766173	1.548144
1995	8,233	118,483	533,504	6.948676	1.543194
1996	9,554	134,844	590,748	7.085224	1.617272
1997	10,838	151,043	617,902	7.17544	1.754
1998	10,643	144,993	546,648	7.340354	1.946957
1999	16,921	148,892	603,589	11.36461	2.803398
2000	21,565	175,234	706,656	12.3064	3.051697
2001	22,271	179,411	686,296	12.4134	3.245101
2002	21,778	175,438	707,067	12.4135	3.080048
2003	23,387	188,398	804,648	12.41361	2.906488
2004	26,178	210,885	939,426	12.4134	2.786595
2005	30,503	257,190	1,182,514	11.8601	2.579504
2006	37,283	303,425	1,335,581	12.28739	2.791519
2007	39,086	314,768	1,430,547	12.4174	2.732242
2008	42,652	336,142	1,522,500	12.68869	2.810961
2009	46,772	362,063	1,614,453	12.91819	2.89708
2010	53,661	398,352	1,629,998	13.01347	3.29209

Source: Ministry of Economy and Planning, (2010)

5.5.3 Community and Social Services

The community and social services include health, housing and educational services, and education. In Saudi Arabia, these functions accounted for the largest share of recurrent expenditure (Figure 5.13).

Figure 5.13: Community and Social Services in Saudi Arabia

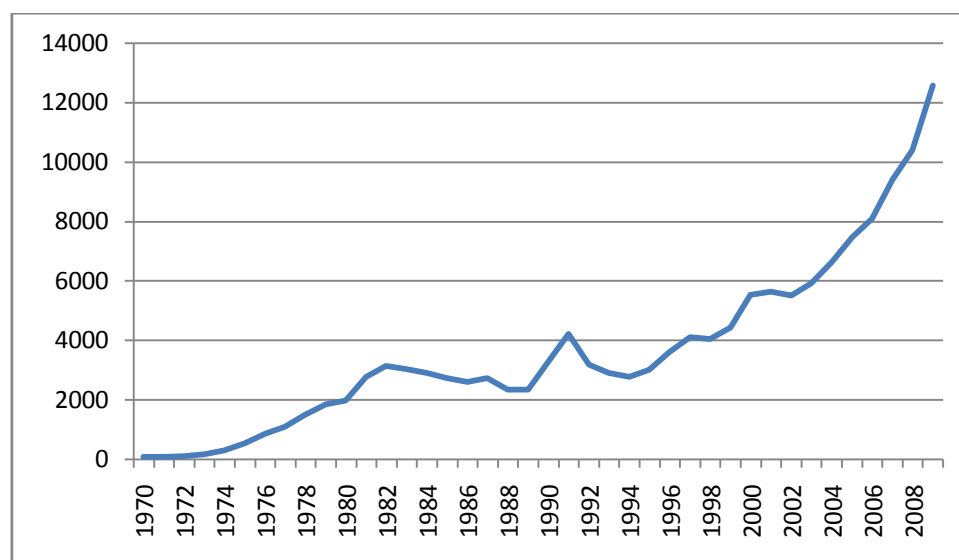


Figure 5.14: The Ratio of Community and Social Services Expenditures in Government Expenditure in Saudi Arabia

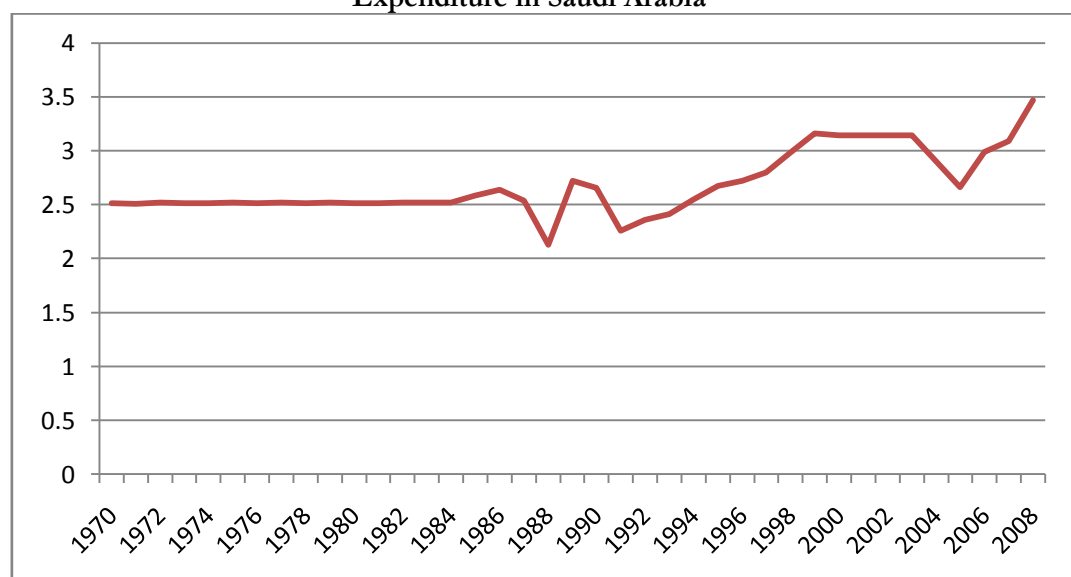


Figure 5.15: The Ratio of Community and Social Services Expenditures in GDP

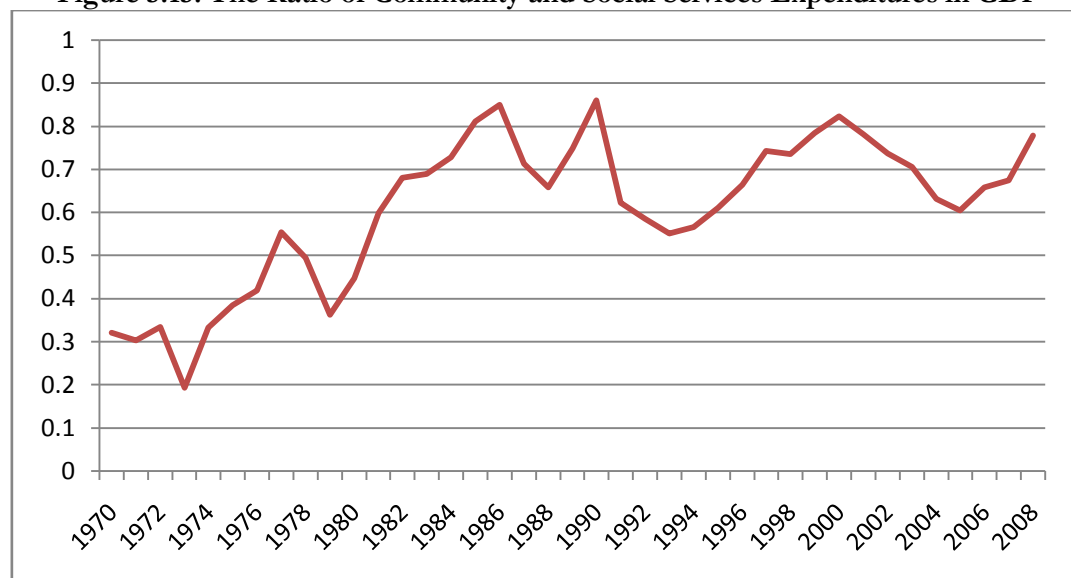


Table 5.9; Figure 5.14 and Figure 5.15, in 1970 show the ratio of Community and Social Services expenditures in government expenditure was about 2.53%, which increased to 2.67% in 1996 and to 3.73% in 2010. Also, the ratio of Community and Social Services expenditures in GDP was about 8.24%, which increased to 0.9% in 2010. The ratio of Community and Social Services spending in government expenditure remained almost steadily between 1970 and 1998, then fell very slightly, and has recently begun to increase at a faster rate from 1999 to 2010.

Table 5.9: Community and Social Services Expenditure in Government Expenditure and GDP

Year	Community and Social Services Expenditures	Government Expenditure	GDP	Community and Social Services Expenditures/Government Expenditures	Community and Social Services Expenditures/GDP
1970	88	3,478	22,565	2.53019	0.389984
1971	98	3,898	30,497	2.51411	0.321343
1972	116	4,621	38,259	2.510279	0.303197
1973	179	7,110	53,531	2.517581	0.334386
1974	310	12,321	159,719	2.51603	0.194091
1975	545	21,671	163,670	2.514882	0.332987
1976	869	34,513	225,347	2.517892	0.385627
1977	1,093	43,436	260,960	2.516346	0.418838
1978	1,511	60,020	272,267	2.517494	0.55497
1979	1,857	73,786	375,469	2.516738	0.494581
1980	1,985	78,841	546,603	2.517726	0.363152
1981	2,780	110,459	622,175	2.516771	0.44682
1982	3,138	124,682	524,197	2.516803	0.59863
1983	3,031	120,403	445,210	2.517379	0.680802
1984	2,899	115,159	420,388	2.517389	0.689601
1985	2,739	108,816	376,319	2.517093	0.72784
1986	2,612	101,057	322,021	2.58468	0.811127
1987	2,725	103,263	320,932	2.638893	0.84909
1988	2,356	92,823	330,518	2.538164	0.71282
1989	2,351	110,498	357,065	2.12764	0.658424
1990	3,276	120,285	437,334	2.723532	0.749084
1991	4,228	158,980	491,852	2.659454	0.859608
1992	3,180	140,673	510,458	2.260562	0.62297
1993	2,899	122,879	494,906	2.359231	0.585768
1994	2,777	115,102	503,054	2.412643	0.552028
1995	3,018	118,483	533,504	2.547201	0.565694
1996	3,606	134,844	590,748	2.674201	0.610413
1997	4,107	151,043	617,902	2.719093	0.664669
1998	4,056	144,993	546,648	2.797376	0.741977
1999	4,439	148,892	603,589	2.981356	0.735434
2000	5,536	175,234	706,656	3.159204	0.783408
2001	5,643	179,411	686,296	3.145292	0.82224
2002	5,518	175,438	707,067	3.145271	0.780407
2003	5,926	188,398	804,648	3.145469	0.736471
2004	6,633	210,885	939,426	3.145316	0.706069
2005	7,461	257,190	1,182,514	2.900968	0.630944
2006	8,084	303,425	1,335,581	2.66425	0.60528
2007	9,406	314,768	1,430,547	2.988233	0.657511
2008	10,395	336,142	1,522,500	3.092443	0.674328
2009	12,567	362,063	1,614,453	3.470943	0.778061
2010	14,873	398,352	1,629,998	3.733633	0.912551

Source: Ministry of Economy and Planning (2010)

5.5.4 Social Security and Welfare

The growth of population and the associated welfare spending including social security has resulted in increased government expenditures in Saudi Arabia, which is depicted in Figure 5.16.

Figure 5.16: The Expenditure of Social Security and Welfare Sector in Saudi Arabia

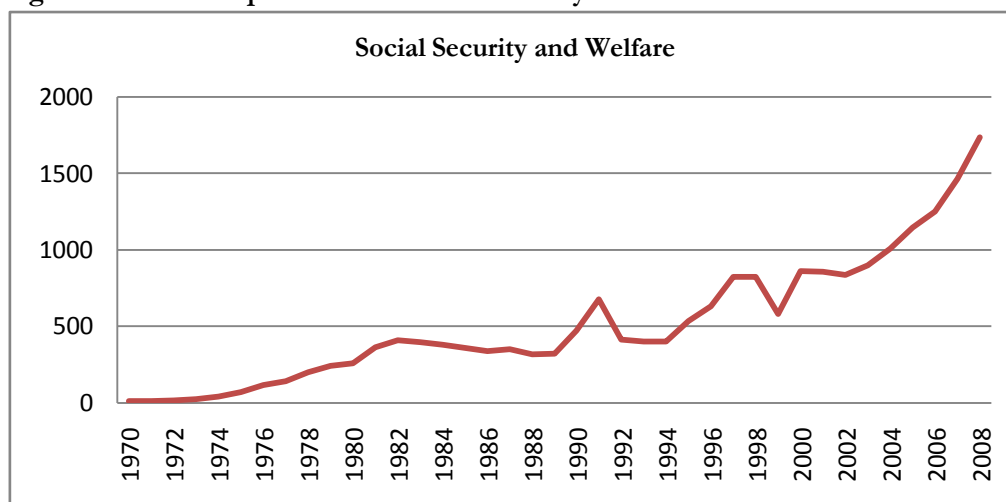


Figure 5.17: The Ratio of Social Security and Welfare Expenditures in Government Expenditure in Saudi Arabia

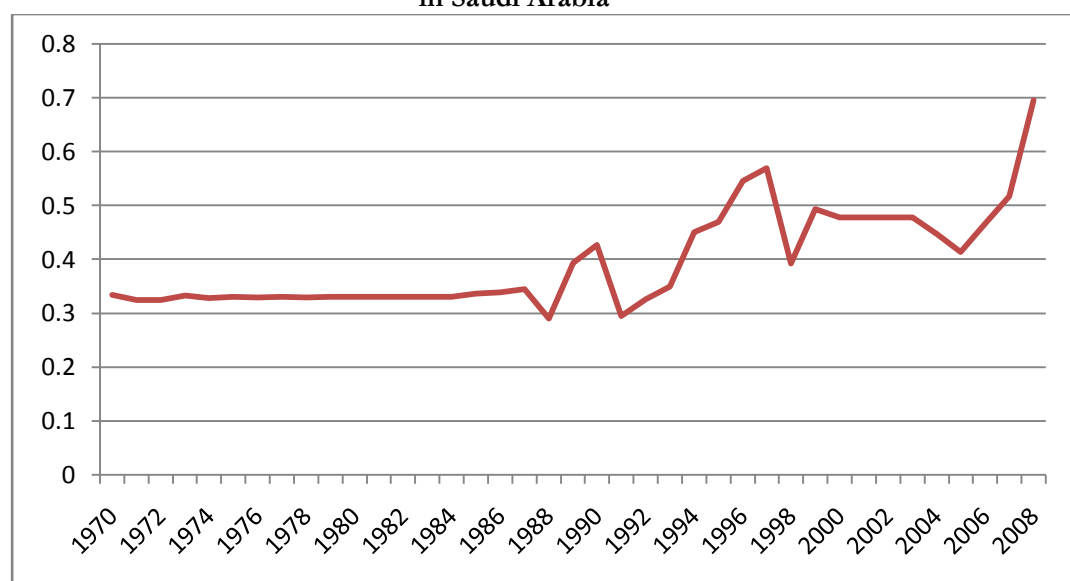
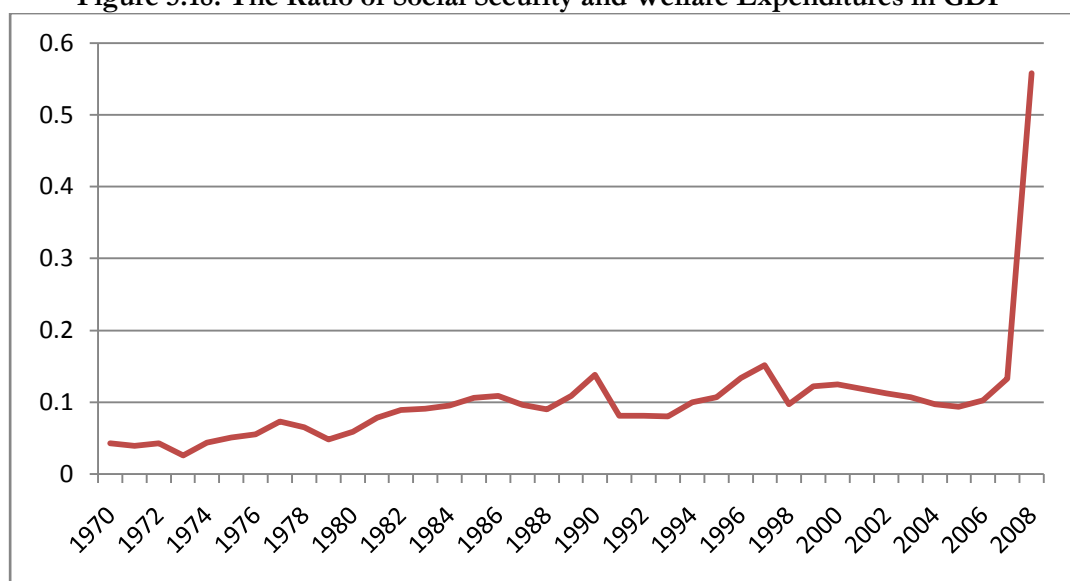


Figure 5.18: The Ratio of Social Security and Welfare Expenditures in GDP



As can be seen in Table 5.10; Figure 5.17 and Figure 5.18, in 1970 the ratio of Social Security and Welfare expenditures in government expenditure was about 0.316%, which increased to 0.4% in 1995 and to 0.8% in 2010. Also, the ratio of Social Security and Welfare expenditures in GDP was about 0.0487% in 1970, which increased to 0.9% in 2010. However, increased oil revenues encouraged government to develop the Social Security and Welfare sector in line with the increased GDP and therefore immediate adjustment witnessed in government expenditure.

Table 5.10: Security and Welfare Expenditure in Government Expenditure and GDP

Year	Social Security and Welfare Expenditures	Government Expenditure	GDP	Social Security and Welfare Expenditures/ Government Expenditures	Social Security and Welfare Expenditures/GDP
1970	11	3,478	22,565	0.316274	0.048748
1971	13	3,898	30,497	0.333504	0.042627
1972	15	4,621	38,259	0.324605	0.039206
1973	23	7,110	53,531	0.323488	0.042966
1974	41	12,321	159,719	0.332765	0.02567
1975	71	21,671	163,670	0.327627	0.04338
1976	114	34,513	225,347	0.33031	0.050589
1977	143	43,436	260,960	0.32922	0.054798
1978	198	60,020	272,267	0.32989	0.072723
1979	243	73,786	375,469	0.329331	0.064719
1980	260	78,841	546,603	0.329778	0.047567
1981	364	110,459	622,175	0.329534	0.058504
1982	411	124,682	524,197	0.329639	0.078406
1983	397	120,403	445,210	0.329726	0.089171
1984	380	115,159	420,388	0.329979	0.090393
1985	359	108,816	376,319	0.329915	0.095398
1986	340	101,057	322,021	0.336444	0.105583
1987	349	103,263	320,932	0.337972	0.108746
1988	319	92,823	330,518	0.343665	0.096515
1989	320	110,498	357,065	0.289598	0.08962
1990	473	120,285	437,334	0.393233	0.108155
1991	677	158,980	491,852	0.42584	0.137643
1992	414	140,673	510,458	0.2943	0.081104
1993	400	122,879	494,906	0.325523	0.080823
1994	402	115,102	503,054	0.349255	0.079912
1995	533	118,483	533,504	0.449854	0.099906
1996	633	134,844	590,748	0.469431	0.107152
1997	823	151,043	617,902	0.544878	0.133193
1998	825	144,993	546,648	0.568993	0.15092
1999	583	148,892	603,589	0.391559	0.096589
2000	864	175,234	706,656	0.493055	0.122266
2001	857	179,411	686,296	0.477674	0.124873
2002	838	175,438	707,067	0.477662	0.118518
2003	900	188,398	804,648	0.477712	0.11185
2004	1,007	210,885	939,426	0.477511	0.107193
2005	1,149	257,190	1,182,514	0.446751	0.097166
2006	1,252	303,425	1,335,581	0.412623	0.093742
2007	1,465	314,768	1,430,547	0.465422	0.102408
2008	1,738	336,142	1,522,500	0.517043	0.132631
2009	2,515	362,063	1,614,453	0.69463	0.557803
2010	3,465	398,352	1,629,998	0.874352	0.913681

Source: Ministry of Economy and Planning, (2010)

5.5.5 Housing and Community Development

The housing sector in Saudi Arabia contributes to economic growth; prosperity and social stability, and government allocated large amounts to make sure that well-being of the society can be served through housing and community development. The development and trends in the housing and community development expenditures can be seen in Figure 5.19.

Figure 5.19: The Expenditure of Housing and Community Development Sector in Saudi Arabia

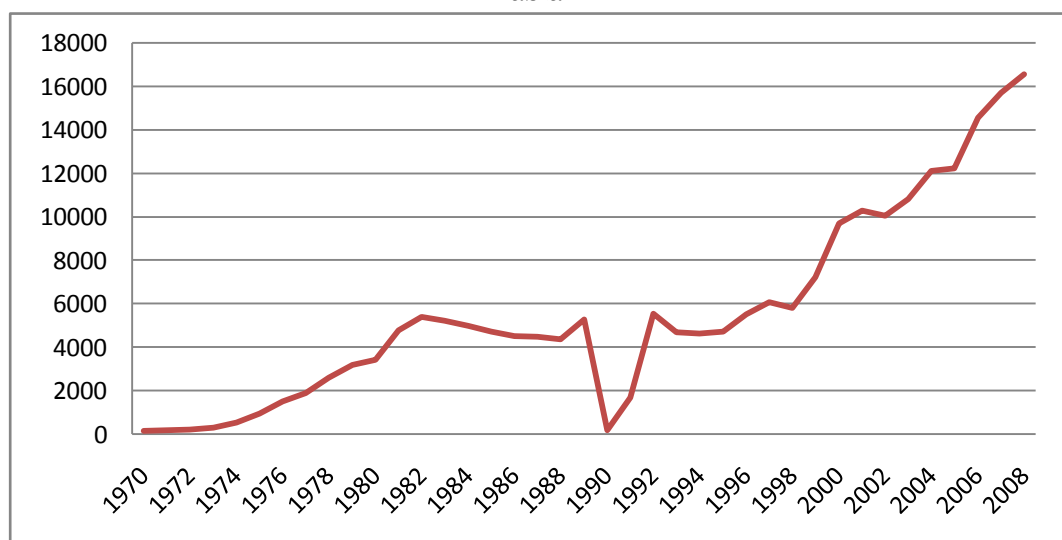


Figure 5.20: The Ratio of Housing and Community Development Expenditures in Government Expenditure in Saudi Arabia

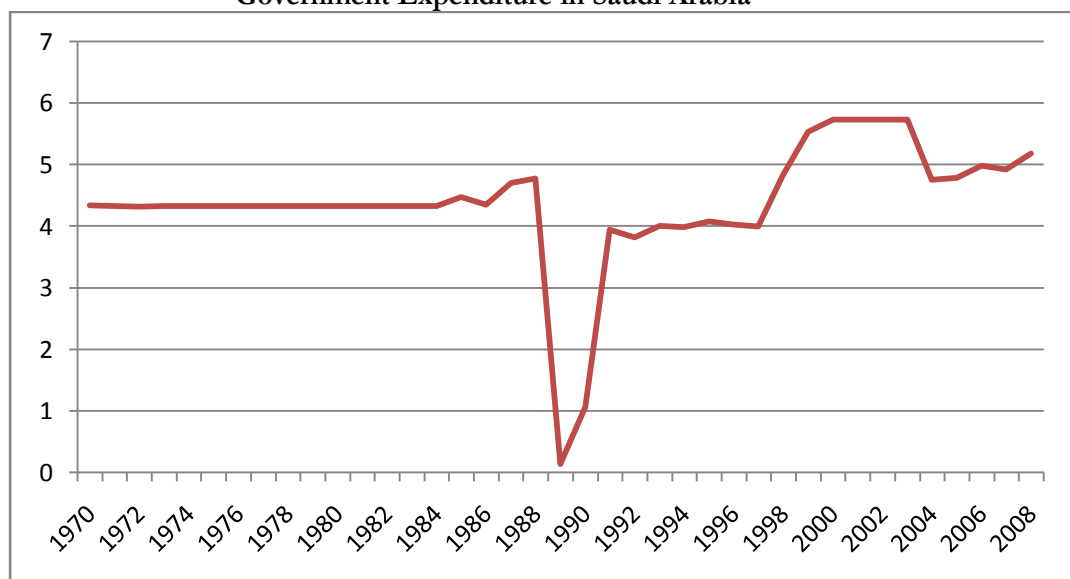
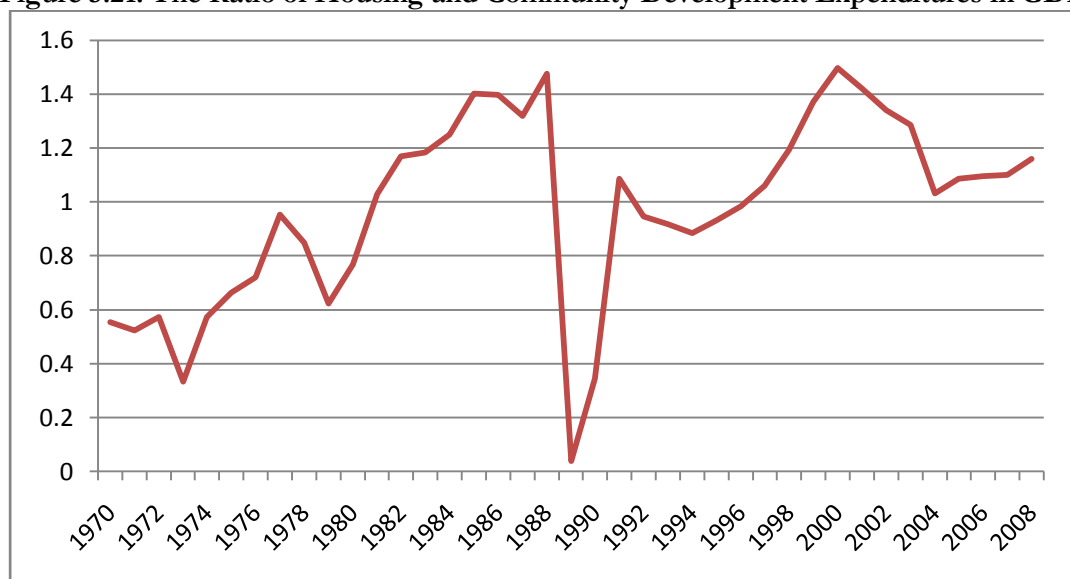


Figure 5.21: The Ratio of Housing and Community Development Expenditures in GDP



As can be seen in Table 5.11; Figure 5.20 and Figure 5.21, in 1970 the ratio of housing and community development expenditures in government expenditure was about 4.31%, which increased to 4.7% in 1989 and to 5.1% in 2010. Also, the ratio of housing and community development expenditures in GDP was about 0.66% in 1970, which increased to 1.25% in 2010. However, increased oil revenues encouraged government to develop the housing and community development sector in line with the increased GDP and therefore immediate adjustment witnessed in government expenditure.

Table 5.11: The Ratio of Housing and Community Development Expenditure in Government Expenditure and GDP

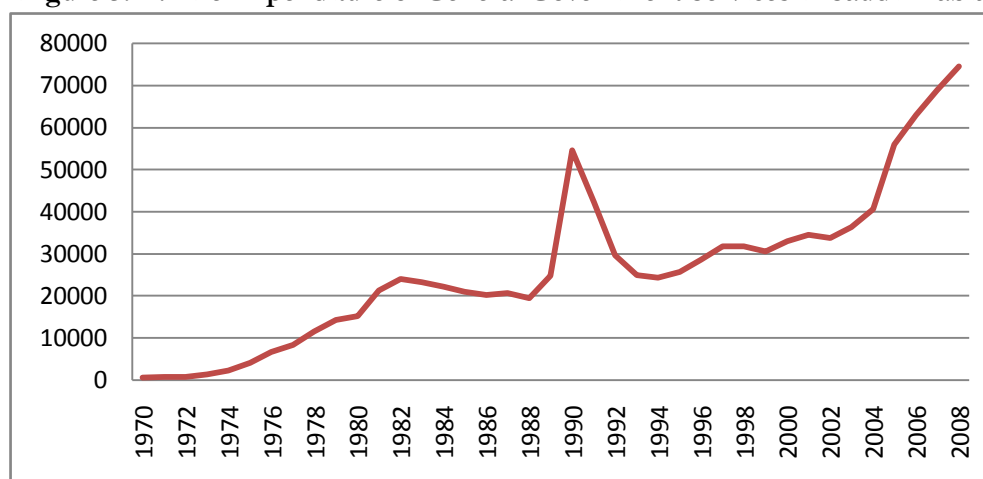
Year	Housing and Community Development Expenditures	Government Expenditure	GDP	Housing and Community Development Expenditures/Government Expenditures	Housing and Community Development Expenditures/GDP
1970	150	3,478	22,565	4.312823	0.664746
1971	169	3,898	30,497	4.335557	0.554153
1972	200	4,621	38,259	4.328068	0.522753
1973	307	7,110	53,531	4.317862	0.573499
1974	533	12,321	159,719	4.325948	0.333711
1975	937	21,671	163,670	4.323751	0.572493
1976	1,493	34,513	225,347	4.325906	0.662534
1977	1,878	43,436	260,960	4.323603	0.719651
1978	2,596	60,020	272,267	4.325225	0.953476
1979	3,191	73,786	375,469	4.324669	0.84987
1980	3,410	78,841	546,603	4.325161	0.623853
1981	4,777	110,459	622,175	4.324682	0.76779
1982	5,392	124,682	524,197	4.324602	1.028621
1983	5,207	120,403	445,210	4.324643	1.16956
1984	4,980	115,159	420,388	4.324456	1.18462
1985	4,706	108,816	376,319	4.324732	1.250535
1986	4,519	101,057	322,021	4.471734	1.403325
1987	4,491	103,263	320,932	4.349089	1.399362
1988	4,361	92,823	330,518	4.698189	1.319444
1989	5,276	110,498	357,065	4.774747	1.477602
1990	166	120,285	437,334	0.138006	0.037957
1991	1,691	158,980	491,852	1.063656	0.343803
1992	5,549	140,673	510,458	3.944609	1.087063
1993	4,687	122,879	494,906	3.814321	0.947049
1994	4,612	115,102	503,054	4.006881	0.9168
1995	4,721	118,483	533,504	3.984538	0.884904
1996	5,505	134,844	590,748	4.082495	0.931869
1997	6,081	151,043	617,902	4.026006	0.984137
1998	5,793	144,993	546,648	3.995365	1.059731
1999	7,210	148,892	603,589	4.842436	1.194521
2000	9,691	175,234	706,656	5.530319	1.371389
2001	10,283	179,411	686,296	5.731533	1.498333
2002	10,055	175,438	707,067	5.731369	1.422072
2003	10,798	188,398	804,648	5.731483	1.341953
2004	12,087	210,885	939,426	5.73156	1.286637
2005	12,215	257,190	1,182,514	4.749407	1.032969
2006	14,530	303,425	1,335,581	4.788663	1.087916
2007	15,685	314,768	1,430,547	4.983035	1.096434
2008	16,546	336,142	1,522,500	4.922324	1.100321
2009	18,743	362,063	1,614,453	5.176723	1.16095
2010	20,341	398,352	1,629,998	5.149466	1.25846

Source: Ministry of Economy and Planning (2010)

5.5.6 General Government Services

The Government Services include all government offices. As can be seen in Figure 5.22 and table (5.5), in 1970, the expenditures for general government services were 672 SAR and it has increased to 74,443 million SAR in 2008.

Figure 5.22: The Expenditure of General Government Services in Saudi Arabia



5.6 DEFENCE EXPENDITURES

Defence affairs are expenses related to the administration and operation of defence. Considering the geo political importance of the Middle East and the Gulf region and the instability associated with these regions, Saudi Arabia has been investing in great amount for the development of its defence and security forces. As mentioned previously, Gulf Wars had huge impact and resulted in large burdens on Saudi Arabia's budget.

As can be seen from Figure 5.23, defence affairs are expenses related to the administration and operation of defence this amount to about 46,018 in 1995 increased to and 60,553 in the year 2004. This share increased in 1991 to 75.99% because of the effect of the Gulf War one. The share of defence expenditure in GDP in Saudi Arabia was 13.7%, since 1971. Defence expenditure has a large share of total government expenditure. According to statistical report in Saudi Arabia, the annual average of defence expenditure from 1970 to 2010 was around 46% of government expenditure (Table 5.12). The ratio of government spending on defence fluctuated during 1990s. As we know the Gulf has witnessed three wars, which was a reason to increase the expenditures of defence in the Gulf. .

Figure 5.23: Defence Expenditures in Saudi Arabia

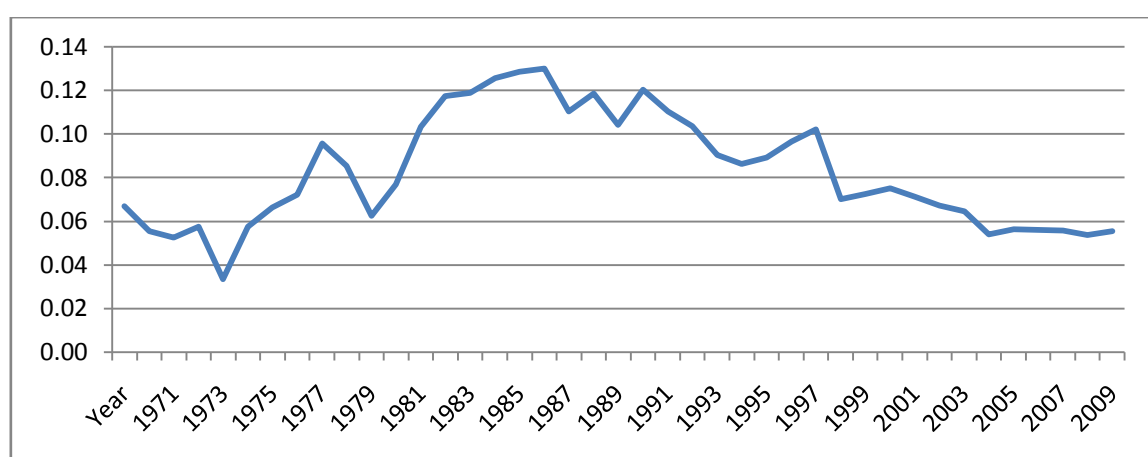


Table 5.12: The ratio of Defence Expenditure

Year	GDP	Defence Expenditures	Defence Exp /GDP
1970	22,565	1,510	0.07
1971	30,497	1,692	0.06
1972	38,259	2,006	0.05
1973	53,531	3,086	0.06
1974	159,719	5,349	0.03
1975	163,670	9,407	0.06
1976	225,347	14,982	0.07
1977	260,960	18,855	0.07
1978	272,267	26,054	0.10
1979	375,469	32,030	0.09
1980	546,603	34,224	0.06
1981	622,175	47,949	0.08
1982	524,197	54,123	0.10
1983	445,210	52,266	0.12
1984	420,388	49,989	0.12
1985	376,319	47,236	0.13
1986	322,021	41,392	0.13
1987	320,932	41,739	0.13
1988	330,518	36,474	0.11
1989	357,065	42,325	0.12
1990	437,334	45,590	0.10
1991	491,852	59,195	0.12
1992	510,458	56,359	0.11
1993	494,906	51,296	0.10
1994	503,054	45,503	0.09
1995	533,504	46,018	0.09
1996	590,748	52,708	0.09
1997	617,902	59,661	0.10
1998	546,648	55,780	0.10
1999	603,589	42,285	0.07
2000	706,656	51,353	0.07
2001	686,296	51,516	0.08
2002	707,067	50,375	0.07
2003	804,648	54,096	0.07
2004	939,426	60,553	0.06
2005	1,182,514	63,949	0.05
2006	1,335,581	75,206	0.06
2007	1,430,547	80,157	0.06
2008	1,522,500	84,932	0.06
2009	1,614,453	86,551	0.05
2010	1,629,998	90,324	0.06

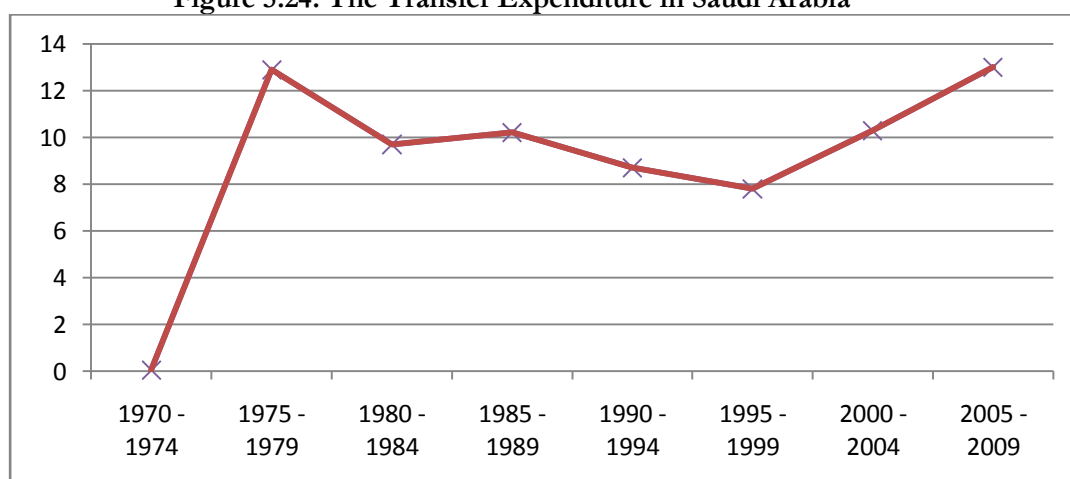
Source: Ministry of Economy and Planning, (2010)

5.7 TRANSFER EXPENDITURES

The development efforts of the Kingdom of Saudi Arabia include supporting the government's economic activity, as well as private and social benefits through the development plans that have been implemented. This support aims to strengthen the economic capacities of individuals and social groups to assist in the generation of independence, and social benefits aimed at improving the living standards of low income citizens. Development plans and financial resources are provided for the granting of loans and social benefits for the beneficiaries.

The Kingdom of Saudi Arabia began to provide such subsidies in 1970, with 49 million SAR, continuing to rise to the highest value in 1979, amounting to 12.9 billion SAR, dropping subsequently to nearly 10.3 billion SAR in 2004 (Figure 5.24). Moreover, the first year of the Eighth Development Plan saw government subsidies in 2005 of about 7.8 billion SAR (Eighth Development Plan, 2005).

Figure 5.24: The Transfer Expenditure in Saudi Arabia



5.8 SOVERIGN WEALTH FUND (SWF)

Sovereign Wealth Funds (SWF) are government-owned investment funds composed of financial assets such as stocks, bonds, property, metals or other financial instruments. This is set up for a variety of macroeconomic purposes. They are commonly funded by the transfer of foreign exchange assets that are invested long term, overseas. According to Greene and Yeager (2008: 248) “a state-owned or influenced fund that obtains its funding from foreign-currency reserves or commodity export revenues, through its certain instances, government budget surpluses and pension surpluses have also been transferred to SWFs”.

SWFs are not new, and some of the longer-established funds, for example those of Saudi Arabia, Kuwait, Abu Dhabi, and Singapore, have existed for decades. However, high oil prices, financial globalization, and sustained, large global imbalances have resulted in the rapid

accumulation of foreign assets particularly by oil exporters and several Asian countries. As a result, the number and size of SWFs are rising fast and their presence in international capital markets is becoming more prominent (Allen and Caruana, 2008).

Saudi Arabia, as one of the GCC countries, has been attempted to plan the economic development utilising the finance provided by oil revenues accumulated in SWFs (Asutay, 2008). As can be seen in Table 5.13, Saudi Arabia, with 5 SWFs, has some of the largest SWFs in the total assets of SWFs in the GCC countries.

Table 5.13: Largest GCC SWFs by Assets under Management

Country	Abbreviation	Fund Name	Assets (Billion Dollars)	Inception	Origin
United Arab Emirates Abu Dhabi	ADIA	Abu Dhabi Investment Authority	627	1976	Oil
	IPIC	International Petroleum Investment Company	48.2	1984	Oil
	MDC	Mubadala Development Company	13.3	2002	Oil
	ADIC	Abu Dhabi Investment Council	X	2007	Oil
United Arab Emirates Dubai	ICD	Investment Corporation of Dubai	19.6	2006	Oil
United Arab Emirates Ra's al Khaymah	RIA	RAK Investment Authority	1.2	2005	Oil
United Arab Emirates – Federal	EIA	Emirates Investment Authority	X	2007	Oil
Saudi Arabia	SAMA	SAMA Foreign Holdings	439.1	n/a	Oil
Saudi Arabia	PIF	Public Investment Fund	5.3	2008	Oil
Kuwait	KIA	Kuwait Investment Authority	202.8	1953	Oil
Qatar	QIA	Qatar Investment Authority	85	2003	Oil
Oman	SGRF	State General Reserve Fund	8.2	1980	Oil & Gas
Oman	OIF	Oman Investment Fund	X	2006	Oil
Bahrain	MHC	Mumtalakat Holding Company	9.1	2006	Oil
Total	1,458.8 (billion dollars)				

Source: Compiled with data provided on SWF Institute website (<http://www.swfinstitute.org/funds.php>)

SWFs are directly involved economic and financial investment and considering that they are owned and regulated by the government, they should be incorporated into the government growth measures as to develop a better understanding of the share of the government in the economy. Since SWFs are not treated as part of the consolidated budget, it is important to endogenous them in measuring the growth of government.

5.9 CONCLUSION

The preceding discussion and presentation shows that Saudi Arabian government has extensively used government expenditures to improve the economic development of the country and stimulate economic growth. The rentier nature of the society provides another important motivation for the government of Saudi Arabia to extend the government expenditures; however, economic development needs has also been an important determining factor.

One of the important findings that this chapter takes into account involves two fundamental issues. First, there was the historical context of the development of the national economy by the initiative of the government and its contributions to the productive sectors in it. With the start of planning of economic and social development in 1970 with the First Development Plan (1970-1974), and an increase in oil revenues in the third year of the plan, the dependence on the crude oil sector has increased. However, policies and strategies are also developed to increase production and investment in non-oil sectors, on the one hand, and to increase the contribution of the private sector in economic growth and employment, on the other. The second issue was linked to the development of oil resources and increased production and export of oil in the race for development of other sectors.

In general, economic and development policies achieved further efficiency not only in through better general economic stability internally and externally, which marked development process over the past twenty-one years, but also in the execution of economic, social and environmental infrastructure projects, as well as in the provision of better education, health and environmental services to citizens. This has helped the expansion of economic activity and acceleration of social development in general. Moreover, business conditions improved in the market economy while efficiency performance has been enhanced in particular.

Accordingly, the government sector in the Kingdom established the foundations of administration and economy, as they did not already exist, such as government departments, public institutions, companies and governmental organisations, and government investments. In addition, government involved in the development of the production activities of the public sector in Saudi Arabia which is a major part of the overall GDP. The general climate of the Saudi economy has improved markedly due to government investment and regulations through

government expenditures and is expected to yield to government efforts aimed at improving the investment climate and the state revenues derived from it in the future.

CHAPTER 6

MODELLING GOVERNMENT GROWTH AND ECONOMIC GROWTH NEXUS FOR SAUDI ARABIA

6.1. INTRODUCTION

As the preceding chapters demonstrated, the government expenditures play a vital role in the economy and its growth in particular in the late developmentalist countries, which considered government expenditures essential for economic development since the mid-20th century. It is due to such reasons that the government expenditures are perceived by the developing countries as the most essential instrument of the fiscal policy, which has gained importance for the decision-maker to achieve the vision of the future of the structuring of economic policy.

As discussed previously, the Saudi Arabian economy depends on oil as the major source of income, which is the main and essential source of financing the government and public expenditures. The relationship between the Saudi business cycle and oil revenues is, therefore, very strong, which means that if there is any change in this source of income, the rest of the economy will be affected accordingly. This is true also for government expenditures, the level of which is determined by the revenues mainly raised through oil export.

Similar to the case of any other developing nations, the Saudi government “has played a pivotal role during the past [four] decades in economic development in the country. In addition to providing infrastructure, establishing a modern educational system, and stabilising the economy, the government has played a significant role in establishing large companies and reducing various market distortions that would have worked against economic efficiency” (Albatel, 2003:82).

This chapter, hence, focuses on modelling of the government’s growth and development in Saudi Arabia after providing descriptive evidence for growth of government expenditures in Chapter 5. The first section in this chapter presents an overview of the Wagner Law; and then reviews all the models derived and developed from Wagner’s Law over the years. The second section, considers the hypothesis; then the models derived and developed from the original Peacock and Wiseman hypothesis are discussed and presented in econometric modelling. In doing so, all the variables are identified and defined for the empirical work. In addition, the Keynesian Relation is examined and the relevant modelling presented to show how the economic development and

government expenditure has been modelled in the literature through aggregate supply modelling. Since times series econometric modelling is used in this study throughout, in validating the models tests such as Unit Root Tests, Co-integration Test, Granger Causality Tests and Error Correction Model Test (ECM) are used which are presented in detail in this chapter.

6.2. MODELLING WAGNER'S LAW

Wagner's general hypothesis has provided scope for a range of different interpretations in the existing literature. It is, consequently, possible to identify at least six of these interpretations: Peacock and Wiseman (1961), Gupta (1967), Goffman (1968), Goffman and Mahar (1971), Pryor (1968), Musgrave (1969), and Mann (1980). These models are depicted in Table (6.1) in a functional form.

As discussed in the earlier chapter, there are significant differences arisen in these interpretations of Wagner's Law, concerned primarily with issues that are discussed in an earlier chapter, which includes the measurement of the economic variables in the hypothesis, the functional form of the relationship between the key variables in Wagner's Law, and the nature of limits to government growth.

Table 6.1: Six Versions of Wagner's Law with Real GDP

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(GDP)$	Peacock-Wiseman	1967
2	$L(GEC) = \alpha + \beta L(GDP)$	Pryor	1968
3	$L(GE) = \alpha + \beta L(GDP / P)$	Goffman	1968
4	$L(GE/GDP) = \alpha + \beta L(GDP / P)$	Musgrave	1969
5	$L(GE/P) = \alpha + \beta L(GDP / P)$	Gupta & Michas	1967 & 1975
6	$L(GE/GDP) = \alpha + \beta L(GDP)$	Mann	1980

In these formulations, the following variables are used (Table 6.2):

Table 6.2: Definition of Variables

Variable	Definition
The symbol (L)	Natural logarithm
GE	Total Government Expenditure
GEC	Total Government Expenditure for consumption
GE / GDP	The share of real total Government expenditure in real GDP
GE / P	Total Government Expenditure per capita
GDP	Gross Domestic Product
P	Population

The different version of Wagner's law has been summarised by Mann (1980), Afxention and Serletis (1996), and Demirbas (1999) in the use of 'log-log models'.

In conducting empirical analysis, some contributors have applied traditional regression analysis, while others have used causality testing, and recently, co-integration analysis has appeared in the literature. In searching for empirical validity, Wagner's Law has been analysed by many researchers among others the following can be mentioned: Bird (1971), Krzyaniak (1974), Sahni and Singh (1984), Abizadeh and gray (1985), Ram (1986, 1987), Henrekson (1992, 1993), Courakis *et al.* (1993), Murthy (1993), Oxley (1994) and Ansari *et al.* (1997).

The six versions of Wagner's Law are briefly discussed in the following sub-sections with the objective of constructing the their econometric model to test in this study for Saudi Arabia.

6.2.1. Peacock and Wiseman's Version (1961) of Wagner's Law

The Peacock and Wiseman explained and defined Wagner's Law, as "the proportion of public expenditures to gross national product must be expected to rise over the foreseeable future" (Peacock and Wiseman, 1961:10). Their interpretation, hence, states that the level of government expenditure is a function of national income and can be expressed in the general relationship shown in equation (6.1).

$$GE = f(GDP) \quad \hat{f} > 0 \text{ \& \; } f' \geq 0 \quad (6.1)$$

where, GE represents total government expenditure, and GDP denotes Gross Domestic Product. The logarithm form can be expressed in the following equation (6.2):

$$L(GE) = \alpha + \beta L(GDP) + \epsilon \quad (6.2)$$

where, α and β are parameters and ϵ is the disturbance term; β is elasticity (E) of Gross Domestic Product (GDP), equation (6.3).

$$E \text{ (Peacock \& Wiseman)} = \frac{d(GE)}{d(GDP)} / \frac{GE}{GDP} \quad (6.3)$$

The elasticity (E) in equation (6.3) is thus interpreted as the percentage change of government expenditure for every one percent change of GDP.

6.2.2. Pryor's Version (1968) of Wagner's Law

Pryor (1968) analysed the growth of government expenditure for consumption as a dependent variable by using a new interpretation of Wagner's Law by arguing that, "Wagner ... asserted that in growing economies the share of government for consumption in the GDP increases" (Pryor, 1968:78). Pryor's general relationship of Wagner's Law is depicted in equation (6.4).

$$GEC = f(GDP) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (6.4)$$

where, GEC stands for total government expenditure for consumption, and GDP denotes Gross Domestic Product. The logarithmic form is expressed as the in the following equation (6.5):

$$L(GEC) = \alpha + \beta L(GDP) + \epsilon \quad (6.5)$$

where, α and β are parameters and ϵ is the disturbance term, β is elasticity (E) of GDP, equation (6.6).

$$E \text{ (Pryor)} = \frac{d(GEC)}{d(GDP)} / \frac{GEC}{GDP} \quad (6.6)$$

The elasticity (E) in equation 6.6 is thus interpreted as the percentage change of government expenditure for consumption for every one percent change in GDP.

6.2.3. Goffman (1968) and Goffman and Mahar's Version (1971) of Wagner's Law

In explaining the growth of government in terms of Wagner's Law, Goffman (1968: 359) stated that "the public sector's share of the community's output increases with economic development". He further states that "As a nation experiences economic development and growth, an increase must occur in the activity of the public sector and the ratio of increase, when converted into expenditure terms, would exceed the rate of increase in output per capita".

Goffman's general relationship of Wagner's Law, hence, is depicted in equation (6.7).

$$GE = f(GDP / P) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (6.7)$$

where, GE represents total government expenditure, P population, GDP represents Gross Domestic Product and GDP/P stands for per capita GDP. The logarithm form is depicted in equation (6.8):

$$L(GE) = \alpha + \beta L(GDP / P) + \epsilon \quad (6.8)$$

where, α and β are parameters and ϵ is the disturbance term, β is elasticity (E) of Gross Domestic Product (GDP) per capita, equation (6.9).

$$E(\text{Goffman}) = \frac{d(GE)}{d(GDP / P)} / \frac{GE}{GDP / P} \quad (6.9)$$

The elasticity (E) in equation (6.9) is interpreted as the percentage change of government expenditure for every one percent change in GDP/P.

6.2.4. Musgrave's Version (1969) of Wagner's Law

Musgrave (1969) investigated the validity of Wagner's law by looking at the ratio of government expenditure relative to GDP per capita. He also explained the Wagner's law as follows: "The proposition of expanding scale, obviously, must be interpreted as postulating a rising share of the public sector in the economy; an absolute increase in the size of the budget can hardly fail to result as the economy expands" (Musgrave, 1969:74).

Musgrave's conceptualisation of the general relationship between economic growth and government expenditures in terms of Wagner's Law is depicted in equation (6.10).

$$GE / GDP = f(GDP / P) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (6.10)$$

where, GE represents total government expenditure, P population, GDP represents Gross Domestic Product, GE / GDP stands for the share of real total Government expenditure in real gross domestic product and GDP / P stands for per capita GDP.

The logarithm form of equation 6.10 can be expressed as in equation (6.11):

$$L(GE / GDP) = \alpha + \beta L(GDP / P) + \epsilon \quad (6.11)$$

where α and β are parameters and ϵ is the disturbance term, β is elasticity (E) of Gross Domestic Product (GDP) per capita, equation (6.12).

The elasticity of government expenditures is estimated through equation (6.12), which implies the percent change of the share of government expenditure in GDP for every one percent change in GDP.

$$E (\text{Musgrave}) = \frac{d(\text{GE} / \text{GDP})}{d(\text{GDP} / P)} \bigg/ \frac{\text{GE} / \text{GDP}}{\text{GDP} / P} \quad (6.12)$$

6.2.5. Gupta's Version (1967) of Wagner's Law

Gupta (1967) explain the Wagner's Law by taking into account the relationship between state activity and national income. Thus, according to Gupta (1967: 426) "Government expenditure must increase at a rate faster than that of the national income".

Gupta's general relationship of Wagner's law is depicted in equation (6.13).

$$\text{GE} / P = f(\text{GDP} / P) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (6.13)$$

where, GE represents total government expenditure, P population, GDP represents Gross Domestic Product, GE / P total Government expenditure in real gross domestic product and GDP / P stands for per capita GDP.

The logarithmic form can be expressed in the following form equation (6.14):

$$L (\text{GE} / P) = \alpha + \beta L (\text{GDP} / P) + \epsilon \quad (6.14)$$

where, α and β are parameters and ϵ is the disturbance term, β is elasticity (E) of Gross Domestic Product (GDP) per capita, equation (6.15).

$$E (\text{Gupta}) = \frac{d(\text{GE} / P)}{d(\text{GDP} / P)} \bigg/ \frac{\text{GE} / P}{\text{GDP} / P} \quad (6.15)$$

The elasticity (E) of government expenditure growth is estimated through equation (6.15), the result of which is interpreted as the percent change of real government expenditure for every one percent change of real GDP or GDP/P.

6.2.6. Mann's Version (1980) of Wagner's Law

Mann (1980) analyzed the Mexican case over the period from 1925 to 1976 within Wagner's Law by using six different formulations of the Law. Mann modified the Peacock and Wiseman interpretation and called it 'a structural version of Wagner's law'. Thus, Mann (1980) interpreted the Wagner's Law by considering that the share of public expenditure in national income should increase at a rate higher than the rate of increase in national income. Mann's formulation of Wagner's law translates into the functional relationship of Wagner's law as depicted in equation (6.16).

$$GE / GDP = f(GDP) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (6.16)$$

where, GE represents total government expenditure, P population, GDP represents Gross Domestic Product, GE / GDP stands for the share of real total Government expenditure in real gross domestic product.

Equation (6.17) expresses the logarithm form:

$$L(GE / GDP) = \alpha + \beta L(GDP) + \epsilon \quad (6.17)$$

where, α and β are parameters and ϵ is the disturbance term, β is elasticity (E) of Gross Domestic Product (GDP).

The coefficient of the independent variable in 6.17 gives the estimates of the elasticity, which is calculated as in equation (6.18), which shows that the impact of one percent change in national income on the share of government expenditures in the national income.

$$E_{(Mann)} = \frac{d(GE/GDP)}{d(GDP)} / \frac{GE/GDP}{GDP} \quad (6.18)$$

6.3. MODELLING PEACOCK AND WISEMAN'S DISPLACEMENT HYPOTHESIS

After Wagner's Law in explaining the growing government in economy, Peacock and Wiseman (1961) offered a working hypothesis to explain the fluctuations in government expenditure over time, which emphasised the pattern of public expenditure trends (Peacock and Wiseman, 1961; xxiii). According to the Peacock and Wiseman's hypothesis, government expenditure tends to grow in a step like pattern, coinciding with social upheavals,

notably wars. To support its explanatory power, Brown and Jackson (1990:123) noted, “Peacock and Wiseman’s study is probably one of the best-known analyses of the time pattern of public expenditure”. The upward shift in government expenditures due to social upheaval is associated with people’s willingness and readiness to pay for the financing of the social upheaval including the wars. As during such periods, it is argued that people’s tolerable level of paying tax increases.

The pattern observed in government expenditures is further explained through the ‘ratchet effect’. Bird (1972) argued that in the case of the ratchet effect, if Gross National Product or GNP declines, then the government expenditure declines, but less than GNP. In addition, in explaining and specifying the ratchet effect, he argued that crises are likely to have short-term implications for the government expenditure ratio or E/GNP rather than crises leading to a permanent upward displacement for E/GNP . In other words, after the social upheaval ceases, it is argued that either government expenditures does not go back to its initial level before the beginning of the social upheaval or if it does decrease, it does not decrease as much as the decrease in the GNP. This is explained through government’s ongoing exploitation of the increased tolerable level of tax payment of the citizens. It should also be noted that Henrekson (1992) argued that the E/GNP have a reduction in the short run in times of unexpectedly rapid GNP growth.

Gupta (1967) may be the first to formulate rigorous statistical tests for a displacement effect, separately testing for a shift in the government expenditure level which is associated with the change in the income elasticity of government expenditure with relation to economic growth.

To test the ‘displacement effect’, Gupta adopted a double logarithmic functional form, which is depicted in equation (6.19).

$$(GE/ P) = a + b (GNP/ P) \quad (6.19)$$

Gupta’s logarithmic form gives a constant elasticity score for the variable (GE/P) with respect to the right hand side variable (GNP/P) . Gupta shifted the original formulation adopted by Peacock and Wiseman, because the original formulae can only explain shifts in the level of public expenditure during wars and crises but cannot explain the shift in the level of public expenditure during a depression since taxes are reduced in this period.

6.4. MODELLING KEYNESIAN RELATION IN EXPLAINING GOVERNMENT EXPENDITURES AND ECONOMIC GROWTH NEXUS

As mentioned earlier, Wagner (1893) formulated and expressed his observation that the public sector expanded with income growth. This relationship resulting from economic growth leads to structural changes in the economic and social relations of society, and to the growth in aggregate demand. In other words, government expenditures as part of fiscal policy result in expanding economic activity. Therefore, during recession times, in the past, government expenditures used as a stimuli to increase the economic activity in such circumstances. In a consequential manner, increased business activity generates further revenues for government, which, in turn, provides further opportunity space for the expansion of government.

In addition, Michas (1975) suggests that in the relationship between government expenditure and GDP per capita, where this relationship assumes that the income elasticity is positive, and that for the relationship itself as well as his proposal to Wagner Law to be valid, there must be a uni-directional causal relationship from income to government expenditure. There also needs to be a causal relationship in the opposite direction of any of the share of government spending and GDP per capita, which corresponds with Keynesian approach to macroeconomic policies. Recalling that, the multiplier concept in all Keynesian models is based on this particular aspect of public expenditure. In sum, the Keynesian relation is therefore is closely associated with growing government expenditures, which implies that as per capita income increases, public sector's importance will grow (Bird, 1971:2).

6.5. IDENTIFICATION OF THE EMPIRICAL MODELS AND DATA

This study aims to model and examine the relationship between increasing government expenditures and economic growth in Saudi Arabia for the period of 1968-2010. For this, time series data and modelling is utilised to examine the mentioned relationship between government expenditure and economic growth.

This study, thus, considers the 43 years period being sufficient to examine the defined relationship between the variables described in table 6.1 above. For the purpose of this research, mainly secondary data collected from various sources are utilised. There are four main sources of data:

- International Financial Statistics produced by the World Bank (IFS);

- SAMA: Saudi Arabia Monetary Agency;
- The Ministry of Economy and Planning;
- International Monetary Fund (IMF)

In the case of Saudi Arabia, the three models as discussed in the preceding sections are tested, the specification of which explained in the following sections. It should be noted that each model is tested with oil and non-oil GDP to locate and remove the impact of oil, respectively. This provides a comparative case for capturing the impact of oil, which is the essential source of revenue.

6.5.1. Wagner's Law and Its Variants

In testing the variants of the Wagner's Law, initial the non-oil GDP as explained in Table (6.3) is used.

Table 6.3: Six Versions of Wagner's Law with Non-Oil Sector of Real GDP

No	Version	Function	Year
1	Peacock-Wiseman	$L(GE) = \alpha + \beta L(\text{Non-Oil GDP})$	1967
2	Pryor	$L(GEC) = \alpha + \beta L(\text{Non-Oil GDP})$	1968
3	Goffman	$L(GE) = \alpha + \beta L(\text{Non-Oil GDP} / P)$	1968
4	Musgrave	$L(GE/\text{Non-Oil GDP}) = \alpha + \beta L(\text{Non-Oil GDP} / P)$	1969
5	Gupta &Michas	$L(GE/P) = \alpha + \beta L(\text{Non-Oil GDP} / P)$	1967 & 1975
6	Mann	$L(GE/\text{Non-Oil GDP}) = \alpha + \beta L(\text{Non-Oil GDP})$	1980

The research also utilises the oil sectors included GDP in searching for the growth of government in Saudi Arabia by using the identified models in Table (6.1). These new formulations are presented in Table (6.4).

Table 6.4: Six Versions of Wagner's Law with Oil Sector of Real GDP

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(\text{Oil GDP})$	Peacock-Wiseman	1967
2	$L(GEC) = \alpha + \beta L(\text{Oil GDP})$	Pryor	1968
3	$L(GE) = \alpha + \beta L(\text{Oil GDP} / P)$	Goffman	1968
4	$L(GE/\text{Oil GDP}) = \alpha + \beta L(\text{Oil GDP} / P)$	Musgrave	1969
5	$L(GE/P) = \alpha + \beta L(\text{Oil GDP} / P)$	Gupta &Michas	1967 & 1975
6	$L(GE/\text{Oil GDP}) = \alpha + \beta L(\text{Oil GDP})$	Mann	1980

6.5.2. Peacock and Wiseman Models

To test the ‘displacement effect’ in Saudi Arabia, Gupta’s (1967) as well as Michas’s (1975) double logarithmic functional form as depicted in the Table (6.5) and (6.6) is utilised. The ‘displacement effect’ is tested by reversing the Peacock-Wiseman version of Wagner’s Law with oil and non-oil GDP.

Table 6.5: The Original Version of Peacock-Wiseman Hypothesis with Real GDP

Function	Version	Year
$L(GE) = \alpha + \beta L(GDP)$	Peacock-Wiseman	1967

Table 6.6: Peacock-Wiseman Hypothesis with Non-Oil Sector Real GDP

Function	Version	Year
$L(GE) = \alpha + \beta L(\text{Non-Oil GDP}) + e$	Peacock-Wiseman	1967

In order to find whether there is a structural break between the two periods the observations from 1968 to 2010 were divided into two groups: from 1968 to 1989 and from 1990 to 2010. There are several reasons for the choice of these years, which attempt to associate variations to major economic and political event in Saudi Arabia during 1968 to 2010. After the 1973 oil shock, prices of oil continued rising -the oil boom began in 1974 - until early 1980’s, expanding the government growth in Saudi economy. In the 1976’s the Saudi economy suffered high inflation as part of the lagged impact of high spending resulting from oil shocks.

The world recession after 1978 and also Saudi Arabia’s support for Iraq in its war against Iran resulted in fiscal difficulties, as on the one hand spending pattern was very high, on the other hand, oil revenues were affected. It should be noted that mega projects undertaken during those years contributed to increased government expenditures and fiscal crisis. The decrease in oil process in 1986, and in the 1990 Iraqi invasion of Kuwait and the war aftermath did not help to the trend in Saudi Arabian government’s budget. Later, in 1998, due to the decline in oil prices in 1998, Saudi Arabia experienced its first major slowdown in economic growth since 1995, after the first Gulf War.

From 1999 to 2001, Saudi economy was a major player in OPEC in influencing the price of oil, because of that, government expenditure increased for education and other social sectors. In 2005, King Abdullah bin Abdul-Aziz became the King of Saudi Arabia, whose aggregate demand

increasing policies pushed increasing government expenditure on the all sectors in Saudi economy. In the recent past, five years of high oil prices from 2006 to 2010 helped the Saudi economy, but falling oil prices and the global economic slowdown in particular since mid-2008 have severely affected economic growth adversely.

The two periods (1968-1990 and 1991-2010), includes many significant economic and political development for Saudi Arabia, but also this break marks the adoption of economic liberalisation policies in Saudi Arabia, as the country followed the suit in 1990s in liberalising its economy and financial sector, but also expressed commitment, hence, to reduce the size of the government. Thus, thus, provides justification for structural break analysis.

In testing the potential structural breakdown in the government expenditure trend, the Chow-test is calculated, which is a version of F- test(Equation 6.20):

$$F = \frac{RSS_c - (RSS_1 + RSS_2) / k}{(RSS_1 + RSS_2) / n - 2k} \quad (6.20)$$

The following hypotheses are developed to search for structural break due to the social upheaval or war:

$$H_0: \beta_i = 0; \text{ (There is no structural break)}$$

$$H_1: \beta_1 \neq 0; \text{ (There is a structural break)}$$

In addition, dummy variable is used to test for the structural break, which proves to be superior over the Chow test to test for structural stability. The dummy variables were set equal to zero for all observations except the year in which the observation goes beyond the threshold of two standard errors. In these years, the dummy variable takes on the value of 1. However, firstly, the Chow test applied to test for structural stability using the formula already defined in equation (6.20).

$$Y = \alpha_t + \beta_1 X_i + \beta_2 D_i + e \quad (6.21)$$

where β = Parameter, D = Dummy Variables, y = year

The dummy variable considered in this study as the intercept dummy variable, as dummy variables can be used to model changes in the slope of the regression line, which is known as slope or interaction dummy variables as modelled in equation 6.21.

6.5.3. Modelling Keynesian Relation

The Keynesian view postulates that government expenditure as the main component of fiscal policy instrument can affect growth. Hence, in the original formulation, the causality runs from government expenditure to economic growth, as explained in equation (6.22).

$$Y_t = f(x_t) + e_t \quad (6.22)$$

In this study, if

$$Y_t = \ln(\text{GDP}) \text{ and } x_t = \ln(\text{GE})$$

then:

$$\ln(\text{GDP}) = \alpha_t + \ln(\text{GE}) + e_t \quad (6.23)$$

where GE stands for total government expenditures, GDP denotes GDP, and E is the standard error.

The Keynesian relation is tested by reversing the three versions of Wagner's Law. Recall three related versions of Wagner's Law as expressed in Table (6.7):

Table 6.7: The original Three Versions of Wagner's Law

No	Function	Version	Year
1	$L(\text{GE}) = \alpha + \beta L(\text{GDP}) + e$	Peacock-Wiseman	1967
2	$L(\text{GE}) = \alpha + \beta L(\text{GDP} / P) + e$	Goffman	1968
3	$L(\text{GE}/P) = \alpha + \beta L(\text{GDP} / P) + e$	Gupta & Michas	1967 & 1975

Accordingly, table (6.8) presents the Keynesian Relations versions with real GDP:

Table 6.8: Three Versions of Keynesian Relations with Real GDP

No	Function	Version	Year
1	$L(\text{GDP}) = \alpha + \beta L(\text{GE}) + e$	Peacock-Wiseman	1967
2	$L(\text{GDP}/P) = \alpha + \beta L(\text{GE}) + e$	Goffman	1968
3	$L(\text{GDP}/P) = \alpha + \beta L(\text{GE}/P) + e$	Gupta & Michas	1967 & 1975

In addition, non-oil GDP is modelled as in Table (6.9) to test the variants of Keynesian Relations.

Table 6.9: Three Versions of Keynesian Relations with Real Non-Oil Sector of GDP

No	Function	Version	Year
1	$L(\text{Non-Oil GDP}) = \alpha + \beta L(\text{GE}) + e$	Peacock-Wiseman	1967
2	$L(\text{Non-Oil GDP} / P) = \alpha + \beta L(\text{GE}) + e$	Goffman	1968
3	$L(\text{Non-Oil GDP} / P) = \alpha + \beta L(\text{GE} / P) + e$	Gupta & Michas	1967 & 1975

6.6. ESTIMATION PROCESS

In this section, the estimation methods used in the literature are presented in order to determine particular method to be used in this study. These methods are identified as time series analysis, co-integration procedure, unit root, and error correction mechanism.

6.6.1. The Unit Root Test

It is generally known that time-series data contain unit roots as they are dominated by stochastic trends (Nelson and Plosser, 1982). Unit root tests are essential in examining the stationary test of a time series because the presence of non-stationary regressors invalidates many standard hypotheses tests.

(i) Trend vs. Differenced Stationary

The standard ways of estimation of time-series data are based on the principles of classical estimation methods like Ordinary Least Squares (OLS) (Judge *et al.*, 1988). However, the application of unit root tests by some macroeconomic time series such as OLS on data with the presence of unit roots can produce misguided results, or spurious results. Thus, OLS method requires stationary variables. As a result, in order to avoid the problem of spurious regressions, unit root test is carried out to find if the series are stationary or not (Greene, 2003).

The latest developments in time series analysis indicate that most macroeconomic time series has a unit root, and is defined as difference stationary; the first difference of time series is stationary. Thus, to test Wagner's Law, the non-stationary property of the series tested first. However, there are several tests available to consider whether the series is stationary or non-stationary:

(a) If the variables under consideration are stationary, this means that the variables do not have a unit root; the series is $I(0)$;

(b) If the variables under consideration are non-stationary in its level form but stationary in its first-difference form, the variables do have a unit root, the series is I (1). As Maddala and Kim (1998) states then according to the null hypothesis there is a unit root in the variable and the series has first-degree integration. Therefore, there is a need to conduct unit root analysis.

(ii) Unit Root Analysis

The most widely used Unit Root analysis tests are Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) (1981) tests. ADF test is performed by estimating the following equation (6.24):

$$\Delta Y_t = a_0 + a_1 t + a_2 Y_{t-1} + \sum_{i=1}^k a_i Y_{t-i} + e_t \quad (6.24)$$

where ΔY = the first difference of the series; Y_t = is the series under consideration (GDP, government expenditures, or government revenues); t is the time trend, k is the number of lag and e_t is a stationary random error (white noise residual).

According to Charemza and Deadman (1992: 135) “the practical rule for establishing the value of $[\varphi]$... is that it should be relatively small in order to save degrees of freedom, but large enough not to allow for the existence of autocorrelation in e_t . For example, if for $[\varphi] = 2$ the Durbin-Watson autocorrelation statistic is low, indicating first order autocorrelation, it would be sensible to increase m with the hope that such autocorrelation will disappear”.

The simple formula in Dickey-Fuller tests establish whether $\beta = 1$ in the model (6.25):

$$Y_t = \beta Y_{t-1} + e_t \quad (6.25)$$

By deducting Y_{t-1} from each side of the equation in re-writing (6.25), the following form is established:

$$\Delta Y_t = \Omega Y_{t-1} + e_t \quad (6.26)$$

where $\Omega = \beta - 1$

Testing the hypothesis with $\beta = 1$ is equivalent to testing the hypothesis $\Omega = 0$ (Enders, 1995:221). The hypothesis are:

$$H_0: \Omega = 0$$

$$H_1: \Omega \neq 0$$

These procedures are applied to each data time series in order to examine their stationary properties by conducting the tests in levels and first difference.

It should be noted that failing to reject the null (H_0) hypothesis implies unit root process. However, if the outcome indicates that the series is stationary after the first difference; the series integrated of order one $I(1)$, then the process is continued with the co-integration test.

6.6.2. Co-integration Test

In the time-series modelling, the co-integration test is carried out if there exists a stationary linear combination of non-stationary random variables. The aim of this test is to examine whether the data demonstrate a long-run relationship.

In brief, this test refers to the situation where multiple series integrate of order (d), or in other words, $I(d)$ where (d) represent the number of unit roots contained in the series. These can combine to produce series integrated of order (k), where k can range from zero to d-1.

According to Engle and Granger (1987), the two series are said to be co-integrated of order (d, b) if Y_t is integrated of order (d) and there exists a vector, β , such that $\beta'Y_t$ is integrated of order (d-b).

An example of two co-integrated series behaves as in equation (6.27).

$$Y_t = \alpha + \beta X_t + e_t \quad (6.27)$$

If the residuals (e_t) from the regression are $I(0)$, then X_t and Y_t are said to be co-integrated and non-stationary. However, the linear combination is stationary. Thus, the series need to be in integration of the same order for co-integrated to be possible.

In this research, the co-integration test is used to substantiate the econometric process in relation to each of the model tested.

6.6.3. Causality test

(i) Standard Granger Causality

Granger causality test is used for testing the long-run relationship between the variables too be tested using time series data of Saudi Arabia data for the period 1968-2010. The Granger procedure is selected because it consists of more powerful and simpler way of testing causal

relationship. Assuming that the two series contain all the information necessary for prediction X Granger-causes Y if lagged X's helps predict Y (Granger, 1980).

Causality test is required to test whether past changes in variables support changes in other variables under the following conditions:

- (a) The two variables used in the test must be stationary;
- (b) The two variables are not integrated of the same order;
- (c) The various economic variables are non-stationary in their respective level.

Granger (1980) causality in the models, are defined in equation (6.28) and (6.29):

$$x_t = \alpha_0 + \sum_{i=1}^r \beta_{xt-i} x_{t-i} + \sum_{i=1}^s \beta_{yt-i} y_{t-i} + \varepsilon_t \quad (6.28)$$

$$y_t = \alpha_0 + \sum_{i=1}^r \beta_{yt-i} y_{t-i} + \sum_{i=1}^s \beta_{xt-i} x_{t-i} + \varepsilon_t \quad (6.29)$$

For equation 6.28, the following hypotheses are constructed:

$$H_0: \beta_{xt-i} = 0, \text{ for } i = 1, 2, \dots, k$$

$$H_1: \beta_{xt-i} \neq 0, \text{ for at least one } i$$

Thus, equation 6.28 is used to test whether (Y_t) Granger causes (X_t).

For equation 6.29, on the other hand, the hypotheses to be tested are:

$$H_0: \beta_{yt-i} = 0, \text{ for } i = 1, 2, \dots, k$$

$$H_1: \beta_{yt-i} \neq 0, \text{ for at least one } i$$

Consequently, equation 6.29 is used to test whether (X_t) Granger causes (Y_t).

In the case of this research, two fundamental issues have to be checked:

- (a) To test the variables individually for the causality between the dependent variables;
- (b) To check the time series properties and especially the co-integrating properties of the time series involved. As Oskooee and Alse (1993:536) pointed out "Standard Granger or Sims tests are only valid if the original time series from which growth rates have generated are not co-integrated."

By following Gujarati's (1995) statements there are four possible results to be derived from the causality test in the case of this study:

- (a) Neither variable ‘Granger causes’ the other means, independence has suggested that when the sets of GDP and GE coefficients are not statistically in both regressions;
- (b) Unidirectional causality from GDP to GE implies that GDP causes GE, but not vice versa indicating that Wagner’s Law applies;
- (c) Unidirectional causality from GE to GDP implies that is GE causes GDP, but not vice versa indicating that Keynesian modelling is valid in this case;
- (d) Bi-directional causality of each other between GDP and GE implying that GDP and GE ‘Granger cause’ each other, so either the Keynesian modelling or Wagner’s Law is valid.

(ii) Error-Correction Models

When variables are found to be co-integrated, a mechanism is required to correct their state, for which Engle and Granger (1987) provide such a procedure known as the ‘Error-Correction Models’ (ECM). The aim of ECM is to determine whether co–integration exists between two variables; there must be Granger causality in at least one direction, but the most valuable aspect is that co-integration does not reflect the direction of causality between the variables.

The ECM is expressed as in equation (6.30) and (6.31):

$$\Delta Y_t = a_1 + \beta_1 ECT_{t-1} + \sum_{i=1}^n \delta_i \Delta Y_{t-1} + \sum_{i=1}^n \Omega_i \Delta X_{t-1} + e_t \quad (6.30)$$

$$\Delta X_t = a_2 + \beta_2 ECT_{t-1} + \sum_{i=1}^n \mathbb{Q}_i \Delta Y_{t-1} + \sum_{i=1}^n \epsilon_i \Delta X_{t-1} + e_t \quad (6.31)$$

where (ECT_{t-1}) is the error correction term lagged one period, is equivalent to $e_t = Y_t - \alpha - \beta X_t$, which represents the disequilibrium residual of a co-integration equation (Fasana and Wang, 2001).

According to Enders (1995: 376), the causality in the ECM is applied in three stages:

(a) Joint Hypothesis:

$H_0: \beta_1 = 0$, $H_0: \delta_i = 0$, for all (i) in equation 6.30, or

$H_0: \beta_2 = 0$, $H_0: \mathbb{Q}_i = 0$, for all (i) in equation 6.31;

(b) Test the significance of (δ_i) and (\mathbb{Q}_i) to check for the possibility of short run causality;

(c) Analysis of the direction of the $(\beta's)$ to see if they infer a long-run equilibrium relationship.

6.7. CONCLUSION

In this chapter, the conceptual and econometric models' aiming to model the government expenditures and economic growth in Saudi Arabia is presented: Wagner's Law, Keynesian model, and Displacement Effect.

As regards to econometric modelling, there are three steps to test the causality between the economic growth in GDP and government spending:

- (i) to analyse the time series features to determine the degree of integration;
- (ii) to determine the relationship between the two variables in the long term;
- (iii) to test the direction of causality in the short and long term

In doing so, the following tests are utilised:

- (i) Ordinary Least Square (OLS);
- (ii) The Unit Root Test, Dickey-Fuller (ADF) test;
- (iii) The Co-integration Test;
- (iv) The Causality Tests, Standard Granger Causality and Error Correction Models (ECM).

In summary, this chapter describes the models used to determine the significance and causality between the identified variables in different models used in this study with the objective of explaining the relationship between government expenditures and economic growth over the years. The following chapters present the applications of the models presented in this study so far in developing the empirical findings.

CHAPTER 7

SEARCHING FOR WAGNER'S LAW IN SAUDI ARABIA: AN EMPIRICAL ANALYSIS

7.1. INTRODUCTION

This chapter being the first empirical chapter provides the application of the research process discussed in Chapter 6 with the objective of testing the Wagner's Law in the case of Saudi Arabia. For this econometric time series analysis is utilised, for which annual data from 1968 to 2010 were collected. Thus, an attempt is made to test the relationship between government expenditures and economic growth by initially using Ordinary Least Square (OLS) for both real GDP and real Non-Oil GDP in relations to its impact on growing government and vice-versa.

In addition, as part of the time-series analysis, the stationary properties of the data using the ADF test for real GDP and real Non-Oil GDP and other variables were conducted. The next step in the time-series analysis is to test whether the variables in the six versions of Wagner's Law are co-integrated. Finally, we have used the Error Correction Model (ECM) to discuss the short run adjustment to equilibrium.

The rest of the chapter is organised as follows: section one, presents some empirical results of relevant theoretical and empirical literature on the relationship between government expenditure and economic growth. In section two of this chapter, the six versions of Wagner's law and their formal expressions presented. Section three, investigates the data and empirical results and analysis by using the identified methods, which have been mentioned in Chapter Six. In addition, section four, presents the results of the analysis by using the time series techniques, while section five, concludes the chapters and presents the finding.

7.2. SURVEYING THE EMPIRICAL STUDIES ON WAGNER'S LAW

Extensive works have examined the relationship between government expenditure and economic growth for all six versions of Wagner's Law. Early studies, including Abizadeh and Gray (1985), Ram (1987) and Abizadeh and Yousefi (1988), returned mixed results. The findings of these authors' empirical tests regarding the validity of Wagner's Law differed from country to country. Some of this research demonstrated that government expenditure growth was determined by national income growth in developed countries, but not in less developed countries. Recent studies,

however, have concentrated on the long-term relationship between government expenditure and national income. Biswal and Lee (1999) considered the relationship between national income and government expenditure in Canada from 1950 to 1995 using Wagner's Law. Their results supported the model. Furthermore, Lall (1969) examined cross-section data from 1962 to 1964 and found no support for Wagner's Law in 46 developing countries. Ram (1987), who also explored the relationship between government expenditures and GDP in 115 countries during the period 1950–1980, obtained mixed results for Wagner's Law.

In the case of Saudi Arabia, Al-Hakami (2002) explored the empirical-causal relationship between government expenditure and GDP over the period 1965–1996. He used time-series analysis to examine the statistical characteristics of the variables. The co-integration test – by examining the trend and pattern of the causal relationship between the two variables – showed that the two-time series co-integrated. The findings highlighted a causal relationship between GDP to government expenditure. Hence, the result implies that government expenditure in oil states based on GDP is ineffective as a policy tool, which supports Wagner's Law.

Payne and Ewing (1996) employed the error-correction model to determine Granger causality between government expenditure and economic growth, measured by GDP per capita. Their results supported Wagner's Law. Furthermore, Burney (2002) applied Wagner's Law when considering the relationship between government expenditure and economic development in Kuwait. He had available series data from 1969 to 1994, and his findings showed support for Wagner's Law over this period.

Courakis *et al.* (1993), Ahsan *et al.* (1996), Chletsos and Kollias (1997), and Kolluri *et al.* (2000) supported this long-term relationship, whereas, Burney (2002) found that the association described by Wagner's Law was not sufficient, accepting instead the Keynesian interpretation. The purpose of this thesis is to test the relationship between government expenditure and economic growth for all the six versions of Wagner's Law in Saudi Arabia, one of the fastest-growing developing countries.

7.3. FORMULATING THE VERSIONS OF WAGNER'S LAW FOR SAUDI ARABIA

As mentioned in Chapter 6, there are six versions of Wagner's law; as Wagner's general hypothesis has provided scope for a range of different interpretations in the

existing literature. It is possible to identify at least six of these interpretations: Peacock and Wiseman (1961), Gupta (1967), Goffman (1968), Goffman and Mahar (1971), Pryor (1968), Musgrave (1969), and Man (1980), which are depicted in Table (7.1).

Table 7.1: Six Versions of Wagner's Law with Real GDP

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(GDP)$	Peacock-Wiseman	1967
2	$L(GEC) = \alpha + \beta L(GDP)$	Pryor	1968
3	$L(GE) = \alpha + \beta L(GDP / P)$	Goffman	1968
4	$L(GE/GDP) = \alpha + \beta L(GDP / P)$	Musgrave	1969
5	$L(GE/P) = \alpha + \beta L(GDP / P)$	Gupta & Michas	1967 & 1975
6	$L(GE/GDP) = \alpha + \beta L(GDP)$	Mann	1980

where:

L	Natural logarithm
GE	Total Government Expenditure
GEC	Total Government Expenditure for consumption
GE / GDP	The share of real total Government expenditure in real GDP
GE / P	Total Government Expenditure per capita
GDP	Gross Domestic Product
P	Population

Each of these models is discussed in the following sections:

(i) Peacock-Wiseman (1967) Version of Wagner's Law

Peacock and Wiseman presented their version of Wagner's Law in 1967, which is called the traditional version. They (1967:17) stated that "Wagner's argument was that government expenditure must increase of an even faster rate than output." This means that the increase in total government expenditure is expected to be at a faster rate than the growth observed in the GDP.

The functional form of Peacock and Wiseman version of Wagner's Law is defined by equation (7.1):

$$GE = f(GDP) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (7.1)$$

where: GE = Total Government Expenditure level in real terms; GDP= Gross Domestic Product in real terms.

$$GE = \alpha + \beta GDP + e \quad (7.2)$$

The equation 7.2 is expressed in logarithm model as in equation (7.3):

$$L (GE) = \alpha + \beta L (GDP) + e \quad (7.3)$$

The government expenditure elasticity is then defined as:

$$E (Peacock \& Wiseman) = \frac{\frac{d(GE)}{d(GDP)}}{\frac{GE}{GDP}} \quad (7.4)$$

The elasticity (E) in equation (7.4) is thus interpreted as the percent change of government expenditure (GE) for every one percent change of GDP.

(ii) Pryor (1968)

According to Pryor (1968:451), "Wagner asserted that in growing economies the share of public consumption expenditures in the national income increases". This statement can be expressed in the following functional form (Equation 7.5):

$$GEC = f (GDP) \quad f' > 0 \& f'' \geq 0 \quad (7.5)$$

where: GEC = Total Government Consumption Expenditure level in real terms, and GDP= Gross Domestic Product in real terms.

$$GEC = \alpha + \beta GDP + e \quad (7.6)$$

The equation by using logarithm model can be expressed as:

$$L (GEC) = \alpha + \beta L (GDP) + e \quad (7.7)$$

The government expenditure elasticity is then expressed as:

$$E (Pryor) = \frac{d(GEC)}{d(GDP)} \bigg/ \frac{GEC}{GDP} \quad (7.8)$$

The elasticity (E) in equation (7.8) is thus interpreted as the percent change of government expenditure of consumption (GEC) for every one percent change of GDP.

(iii) Goffman (1968)

Goffman (1968) introduced population into Wagner's Law, and therefore considered that with the increase in per capita income government expenditures will increase. This can be explained in the following functional form:

$$GE = f (GDP/ p) \quad f' > 0 \& f'' \geq 0 \quad (7.9)$$

where: GE = Total Government Expenditure level in real terms; and GDP/P= Per Capita Gross Domestic Product in real terms.

This can be transformed into the following equation:

$$GE = \alpha + \beta \text{ GDP/P} + e \quad (7.10)$$

The equation by using logarithm model can be expressed as:

$$L(GE) = \alpha + \beta L(GDP/P) + e \quad (7.11)$$

The elasticity in equation 7.11 is then expressed as:

$$E(\text{Goffman}) = \frac{d(GE)}{d\left(\frac{GDP}{P}\right)} / \frac{GE}{\frac{GDP}{P}} \quad (7.12)$$

The elasticity (E) in equation 7.12 is thus interpreted as the percent change of government expenditure (GE) for every one percent change of per capita GDP (GDP/P).

(iv) Musgrave (1967)

Musgrave (1967) conceptualised the Wagner's Law as the relationship between per capita income and the government expenditure ratio, which is expressed in the following functional form:

$$GE / GDP = f(GDP/P) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (7.13)$$

where: GE / GDP= the ratio of Government Expenditure level in real terms; and GDP/P= Per Capita Gross Domestic Product in real terms.

Equation (7.13) is expressed in the following equation:

$$GE/GDP = \alpha + \beta \text{ GDP/P} + e \quad (7.14)$$

Equation 7.14 is transformed by using logarithm model as in equation (7.15):

$$L(GE/GDP) = \alpha + \beta L(GDP/P) + e \quad (7.15)$$

The government expenditures elasticity in equation (7.15) is expressed as:

$$E(\text{Musgrave}) = \frac{d(GE/GDP)}{d(GDP/P)} / \frac{GE/GDP}{GDP/P} \quad (7.16)$$

The elasticity (E) in equation (7.16) is thus interpreted as the percent change of government expenditure ratio to GDP (GE/GDP) for every one percent change of Per Capita Gross Domestic Product (GDP/P).

(v) Gupta (1967)

Gupta in his 1967 articulation of the Wagner's Law, considered the relationship between GDP and government expenditures in terms of per capita, which is explained in the following functional format:

$$GE/P = f(GDP/P) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (7.17)$$

where: GE/P = Total Government Expenditure per capita in real terms; and GDP/P = Per Capita Gross Domestic Product in real terms.

This functional relationship can be re-expressed in the following equation:

$$GE/P = \alpha + \beta GDP/P + e \quad (7.18)$$

The equation by using logarithm model is expressed in the following manner:

$$L(GE/P) = \alpha + \beta L(GDP/P) + e \quad (7.19)$$

The elasticity in the equation (7.19) can be expressed in the following equation:

$$E_{\text{(Gupta)}} = \frac{d(GE/P)}{d(GDP/P)} \bigg/ \frac{GE/P}{GDP/P} \quad (7.20)$$

The elasticity (E) in equation (7.20) is thus interpreted as the percent change of government expenditure per capita (GE/P) for every one percent change of Per Capita Gross Domestic Product (GDP/P).

(vi) Mann (1980)

Mann (1980) interpreted Wagner's Law as a relationship between government expenditure ratio and GDP, which is expressed in the following functional form:

$$GE/GDP = f(GDP) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (7.21)$$

where: GE/GDP = the ratio of Government Expenditure level in real terms; GDP = Gross Domestic Product in real terms.

This can be transformed into:

$$GE/GDP = \alpha + \beta GDP + e \quad (7.22)$$

The equation by using logarithm model is expressed as below:

$$L(GE/GDP) = \alpha + \beta L(GDP) + e \quad (7.23)$$

The elasticity in equation (7.24) is explained as:

$$E_{(Mann)} = \frac{d(GE/GDP)}{d(GDP)} / \frac{GE/GDP}{GDP} \quad (7.24)$$

The elasticity (E) in equation (7.24) is thus interpreted as the percent change of the ratio of government expenditure to GDP (GE/GDP) for every one percent change of GDP.

7.4. THE EMPIRICAL RESULTS AND ANALYSIS WITH OLS

This section of the thesis presents the research process and the analysis, which presents the results as well in a detailed manner. It starts with describing the OLS process:

The ordinary least square test (OLS) is employed to determine the parameters in the equations, in which the logarithm model is utilised for the following:

- (i) The parameters of the logarithm model have an explanation as elasticities;
- (ii) The logarithm transformation is used when all the data are positive. According to, Gujarati (1995), the normal regression model is obtained by taking logs of both sides of the equation (7.25):

$$Y = \alpha + \beta X + e \quad (7.25)$$

to be:

$$\text{Log } Y = \alpha + \beta \text{Log } X + e \quad (7.26)$$

The slope is determined by as in equation (7.27):

$$\text{Slope} = \frac{dy}{dx} = \beta * \frac{y}{x} \quad (7.27)$$

The elasticity is:

$$E = \text{Elasticity} = \frac{d(y)}{d(x)} / \frac{y}{x} = \beta \quad (7.28)$$

For simplicity, E can be written as:

$$\beta = \frac{d(y)}{d(x)} / \frac{y}{x} \quad (7.29)$$

7.4.1. Testing the Versions of Wagner's Law with Real GDP

This section provides the results of the empirical analysis by using real GDP within the initial OLS framework as explained above. The analysis later is further developed by employing cointegration analysis.

(i) Peacock-Wiseman (1967) Version of Wagner's Law

According to the specification and functional and logarithmic form expressed in the previous section, the following estimates in table (7.2) are established for the Peacock and Wiseman version of Wagner's Law for the period of 1968 to 2010 for Saudi Arabia:

Table 7.2: Regression Results for Peacock & Wiseman Version with Real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Peacock & Wiseman	L(GE)	-2.836	L (GDP)	1.1078	0.9016

The estimates in Table (7.2) can be expressed in the following functional form:

$$L(GE) = -2.836 + 1.1078 L(GDP) \quad (7.30)$$

(-3.85) (19.14)

The numbers between parentheses are t- statistics for each estimated measure and intercept. In equation (7.30), to get the growth rate (elasticity), elasticity (coefficient) is directly measured with the coefficient of GDP, namely $E = 1.1078 > 0$, which indicates that the elasticity of government expenditure with respect to GDP is 1.1078. In other words, this value means an increase of 1% unit in GDP generates a 1.1078% unit increase in Government Expenditure (GE). The independent variable (GDP) explains 90.16% of the variations in GE, leaving only 9.84% to explain by the stochastic disturbance term.

It should be noted that this finding for Saudi Arabia for the period in question is consistent with Wagner's Law of increasing state activities, which states that the income elasticity of demand for public goods is greater than unity. The results above show that the expenditure elasticity with respect to GDP (β) is greater than unity (1.1078). This study, hence, verifies Wagner's Law in its traditional version as expressed by Peacock and Wiseman (1967), which indicates that economic growth has caused government expenditure to increase at a faster rate than that of national income.

(ii) Testing Pryor's (1968) Version of Wagner's Law

As defined and expressed in the previous section, the estimates for Pryor's version of Wagner's Law through OLS are presented in Table (7.3) for Saudi Arabia for the period of 1968-2010:

Table 7.3: Regression Results for Pryor Version with Real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Pryor	L(GEC)	1.307	L (GDP)	0.8078	0.8555

The results of the OLS can be written in a functional form as:

$$L(GEC) = 1.307 + 0.8078 L(GDP) \quad (7.31)$$

(1.95) (15.39)

From equation (7.31), the impact of GDP growth on government consumption expenditures, GEC, can be measured through the elasticity (E) or coefficient value directly, which is $0.8078 > 0$. This implies that 1% unit increase in GDP generates a 0.8078% unit increase in government expenditure for consumption (GEC). The independent variable or GDP explains 86% of the variations in government expenditures or as indicated by R², leaving only 14% to be explained by the stochastic disturbance term e , implying that there exist other factors, which explain the variations in government expenditure for consumption. It can, therefore, be concluded that Pryor version of Wagner's Law is also validated in the case of Saudi Arabia as explained.

(iii) Testing Goffman (1968) Version of Wagner Law with Real GDP

As compared to the previous two models, Goffman (1968), as discussed above, considers GDP per capita rather than GDP level. Thus, this section utilise real GDP per capita in searching for evidence for government growth in the case of Saudi Arabia from

1968 to 2010 by utilising Goffman's version of Wagner Law. The result can be found in Table (7.4).

Table 7.4: Regression Results for Goffman Version with Real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Goffman	L(GE)	-3.119	L (GDP/P)	1.4156	0.6734

The results in Table (7.4) can be transformed into functional form as follows:

$$\begin{matrix} L(GE) = -3.119 + 1.4156 L (GDP/P) & (7.32) \\ (-1.97) & (9.08) \end{matrix}$$

The numbers between parentheses are (t- statistics) for each estimated measure and intercept. As the results in table 7.4 for the period of 1968 to 2010 indicate the impact of GDP per capita or the elasticity of government expenditure is identified as the coefficient of the independent variable, which is $1.4156 > 0$. This implies that 1% unit increase in GDP per capita generates a 1.4156% unit increase in government expenditure or GE. Thus, as predicted by the theory, when people's income increases their expectations from the state do also increase, as with income increase they move to different class segments and the demand for other types of government services beyond the classical function increases, which results in increased government expenditures.

As the estimates in Table (7.4) depict, the independent variable (GDP/P) explains 67.34% of the variations in government expenditures, leaving only 32.66% to be explained by the stochastic disturbance term, or e.

It can, thus, be concluded that Goffman version of Wagner's Law is also validated in the case of Saudi Arabia by using OLS estimation method.

(iv) Testing Musgrave's (1967) Version of Wagner Law

The fourth version of Wagner's Law that is tested in this thesis is by Musgrave, who considered the government growth in the form of government expenditure growth and GDP per capita. The OLS estimates for Musgrave's version in the case of Saudi Arabia for the period of 1968-2010 is depicted in Table (7.5):

Table 7.5: Regression Results for Musgrave Version Real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Musgrave	L(GE/GDP)	-1.7900	L (GDP/P)	0.3184	0.3200

The results are also expressed in a functional form in the following manner:

$$L(GE/GDP) = -1.7900 + 0.3184 L(GDP/P) \quad (7.33)$$

(-1.98) (0.36)

The numbers between parentheses are (t- statistics) for each estimated measure and intercept. As can be seen from the results, the coefficient of per capita GDP or government expenditure growth rate or elasticity is $0.3184 > 0$. This implies that a 1% unit in GDP generates a 0.3184 % unit increase in the ratio of government expenditure (GE/GDP).

Compared to the previous models, the findings for Musgrave's version show lower explanatory power for the independent variable or the real per capita income, as can be seen the GDP/P, as the explanatory variable explains only 32% of the variations in GE, leaving only 68% to explain by the stochastic disturbance term e.

It can therefore be concluded that while Musgrave's version of Wagner's Law is validated by this study for Saudi Arabia, due to the low R^2 value caution should be taken.

(v) Testing Gupta's (1967) Version of Wagner's Law with Real GDP

Gupta in his version (1967) of Wagner's Law relates the per capita GDP with per capita government expenditures. The results for Gupta's version of Wagner's Law in the case of Saudi Arabia for the period of 1968-2010 are depicted in Table (7.6):

Table 7.6: Regression Results for Gupta Version with Real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Gupta	L(GE/P)	-1.7900	L (GDP/P)	1.0318	0.7703

The results in table 7.6 can be transformed into functional form as follows:

$$L(GE/P) = -1.7900 + 1.0318 L(GDP/P) \quad (7.34)$$

(-1.98) (11.58)

The numbers between parentheses are (t- statistics) for each estimated measure and intercept. The estimated growth rate or elasticity of the per capita government expenditures, as measured by coefficient value of the independent variable, namely per capita GDP indicates $E = 1.0318 > 0$. This clearly shows that growth in per capita income has strong impact on government expenditures. In other words, increase of 1% unit in GDP generates a 1.0318% unit increase in government expenditure per capita (GE/P). This finding is consistent with Wagner's Law of increasing state activities, which states that the income elasticity of demand for public goods is greater than unity.

The results in Table (7.6) also show that the independent variable (GDP/P) explains 77% of the variations in per capita government expenditure change, leaving only 23% to be explained by the stochastic disturbance term, e .

It can therefore be concluded that Gupta (1967) version of government expenditure growth of Wagner's Law is also verified in the case of Saudi Arabia.

(vi) Testing Mann's (1980) Version of Wagner's Law with Real GDP

The Mann's version of Wagner's Law is tested and the following estimates were found:

$$L(GE/GDP) = -2.8366 + 0.10789L(GDP) \quad (7.35)$$

(-3.85) (1.86)

The figures between the parentheses are (t- statistics) for each estimated measure and intercept. In equation 7.35, for the period of 1968 to 2010, to get the growth rate (elasticity), the estimated value of the coefficient is used as $E = 0.10789 > 0$, which implies that a 1% unit in GDP generates a 0.10789% unit increase in the ratio of Government Expenditure (GE/GDP). Thus, the independent variable or GDP explains 38% of the variations in GE/GDP, leaving only 62% to explain by the stochastic disturbance term, e .

The results in Table (7.7) show that the expenditure elasticity with respect to GDP (β) is greater than unity (0.10789); Wagner's Law is, thus, according to Nagarajan and Spreares (1990) in their comments on Mann's study indicated the straight income elasticity in order to validate the hypothesis would to be ($E > 1$) and the ratio income elasticity need only be ($E > 1$). Importantly, since the income elasticity is greater than zero, Wagner's Law is validated.

Table 7.7:Regression Results for Mann Version with Real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Mann	L(GE/GDP)	-2.8366	L (GDP)	0.10789	0.3791

7.4.2. Testing the Versions of Wagner's Law with Non-Oil real GDP

In order to avoid the deterministic nature of the oil revenues with an attempt to search for the impact of non-oil economic activity on government expenditures, non-oil real GDP is utilised. All the six versions of the Wagner Law are formulated as in Table (7.8).

Table 7.8: Six Versions of Wagner's Law with Real Non-Oil Sector of GDP

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(\text{Non-Oil real GDP})$	Peacock-Wiseman	1967
2	$L(GEC) = \alpha + \beta L(\text{Non-Oil real GDP})$	Pryor	1968
3	$L(GE) = \alpha + \beta L(\text{Non-Oil real GDP} / P)$	Goffman	1968
4	$L(GE/\text{Non-Oil real GDP}) = \alpha + \beta L(\text{Non-Oil real GDP}/P)$	Musgrave	1969
5	$L(GE/P) = \alpha + \beta L(\text{Non-Oil real GDP} / P)$	Gupta & Michas	1975
6	$L(GE/\text{Non-Oil real GDP}) = \alpha + \beta L(\text{Non-Oil real GDP})$	Mann	1980

(i) Testing Peacock-Wiseman (1967) Version of Wagner's Law with Non-Oil Real-GDP

The estimation for the Peacock and Wiseman version of the Wagner Law for the period of 1968-2010 with non-oil real GDP is present as follows:

$$L(GE) = -2.2224 + 1.0936L(\text{Non-oil real GDP}) \quad (7.36)$$

(-13.46) (85.43)

As can be seen in equation (7.36), the growth rate or the elasticity value is given by the coefficient of the independent variable, namely the non-oil real GDP which is $E = 1.0936 > 0$. This implies that an increase of 1% unit in Non-Oil real GDP generates a 1.0936% unit increase Government Expenditure (GE).

As can be seen in Table (7.9), the independent variable (Non-Oil real GDP) explains 99.45% of the variations in GE, leaving only 0.55% to explain by the stochastic disturbance term, e .

This finding in this section is consistent with Wagner's Law of increasing state activities, which states that the income elasticity of demand for public goods is greater than unity. The results above show that the expenditure elasticity with respect to Non-Oil real GDP (β) is greater than unity (1.0936). Wagner's Law is, thus, according to the traditional version, namely Peacock and Wiseman (1967) confirmed, in the sense that economic growth indeed has caused government expenditure to increase at a faster rate than that of national income in Saudi Arabia (Table 7.9).

Table 7.9: Regression Results for Peacock and Wiseman Version with Non-Oil real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Peacock and Wiseman	L(GE)	-2.2224	L (Non-Oil GDP)	1.0936	0.9945

(ii) Testing Pryor (1968) Version of Wagner's Law with Non-Oil Real-GDP

The Pryor version of the Wagner's Law with non-oil real GDP for the period of 1968-2010 is:

$$L(GEC) = 1.8422 + 0.79688 L(\text{Non-Oil GDP}) \quad (7.37)$$

$$(4.83) \quad (25.62)$$

The figures in the parentheses are t- statistics for each of the estimated measure and intercept. As the findings indicate, the growth rate (elasticity), as the coefficient of the independent variable is $E = 0.79688 > 0$. This value means an increase of 1% unit in Non-Oil real GDP generates a 0.79688% unit increase GEC, or Government Expenditure.

As can be seen in Table (7.10), the independent variable, namely the Non-Oil real GDP explains 94% of the variations in GEC.

Table 7.10: Regression Results for Pryor Version with Real Non-Oil GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Pryor	L(GEC)	1.8422	L (Non-Oil GDP)	0.79688	0.9426

(iii) Testing Goffman (1968) Version of Wagner's Law with Non-Oil Real-GDP

The Goffman version of Wagner's Law with non-oil real GDP for the period of 1968-2010 is estimated and the results are presented in equation (7.38) and table (7.11):

$$L(GE) = -4.701615 + 1.6529 L(\text{Non-Oil-GDP/P}) \quad (7.38)$$

$$(-7.68) \quad (26.08)$$

As the coefficient of the independent variable indicates, the elasticity or the growth rate of the government expenditures is $E = 1.6529 > 0$, which implies that a 1% unit increase in Non-Oil real GDP/P generates a 1.6529% unit increase Government Expenditure (GE). The robustness of the linear relationship can be seen from the value of the coefficient of determination, which is 94.45%, and hence non-oil real GDP explains about 95% of the variation in GE.

Table 7.11: Regression Results for Goffman Version with Real Non-Oil GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Goffman	L(GE)	-4.70162	L (Non-Oil GDP/P)	1.6529	0.9445

(iv) Testing Musgrave (1967) Version of Wagner's Law with Non-Oil Real-GDP

The estimated Musgrave version of the Wagner's Law for the period of 1968-2010 for Saudi Arabia is presented in equation (7.39) and table (7.12):

$$L(GE/Non-Oil-GDP) = -2.448 + 0.1533L(Non-Oil-GDP/P) \quad (7.39)$$

(-13.88) (8.40)

As the t-statistics between the brackets indicates, the independent variable, non-oil real GDP per-capita, is statistically significant. As to the growth rate of the ratio of government expenditure to non-oil real GDP, it is given by the coefficient of the independent variable which is $E = 0.1533 > 0$, which implies that a 1% unit increase in non-oil GDP generates a 0.1533% unit increase the ratio of Government Expenditure (GE/Non-Oil GDP). Thus, the impact of non-oil real GDP on government expenditure ratio is less than unit. In addition, as can be seen from table 7.12, the independent variable (Non-Oil real GDP/P) explains 64% of the variations in GE indicating a moderate relationship.

Table 7.12: Regression Results for Musgrave Version with Real Non-Oil GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Musgrave	L(GE/Non-Oil GDP)	-2.448	L (Non-Oil GDP/P)	0.1533	0.6382

(v) Testing Gupta (1967) Version of Wagner's Law with Non-Oil Real-GDP

The Gupta version of Wagner's Law for the period of 1968-2010 for Saudi Arabia is estimated as follows:

$$L(GE/P) = -2.4473 + 1.1531 L(Non-Oil GDP/P) \quad (7.40)$$

(-13.88) (63.19)

Equation (7.40) indicates that the non-oil real GDP per-capita, as the dependent variable, is statistically significant. The growth rate of per-capita government expenditures as measured through the coefficient of the dependent variable is $E = 1.1531 > 0$. Accordingly, a 1% unit increase in non-oil real GDP generates a 1.1531 % unit increase Government Expenditure per capita (GE/P). As regards to the explanatory power of the model, as shown in Table (7.13), the independent variable (Non-Oil real GDP/P) explains 77% of the variations in GE/P, leaving only 23% to explain by the stochastic disturbance term, e.

It should be noted that this finding is consistent with Wagner's Law of increasing state activities, which states the income elasticity of demand for public goods is greater than unity.

Table 7.13: Regression Results for Gupta Version with Non-Oil real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Gupta	L(GE/P)	-2.4473	L (Non-Oil GDP/P)	1.1531	0.7703

(vi) Testing Mann's (1980) Version of Wagner's Law with Non-Oil real GDP

Equation (7.41) and Table (7.14) presents the results of the estimated Mann's version of Wagner's Law for the period of 1968-2010 for Saudi Arabia:

$$L(GE/Non-Oil \text{ real GDP}) = -2.111 + 0.0936 L(Non-Oil \text{ real GDP}) \quad (7.41)$$

(-13.46) (7.31)

As can be seen, the independent variable in the form of non-oil real GDP is statistically significant, as the t- statistics indicates. The growth rate of government expenditure ratio or the elasticity is $E = 0.0936 > 0$. This value means an increase of 1% unit in non-oil real GDP generates a 0.0936% unit increase in the ratio of Government Expenditure (GE/Non-Oil real GDP). Thus, the results show that the expenditure elasticity with respect to Non-Oil real GDP, (β) is greater than unity. In addition, as can be seen in table 7.14, the independent variable (Non-Oil real GDP) explains 57% of the variations in GE/Non-Oil real GDP.

Table 7.14: Regression Results for Mann Version with Non-Oil real GDP

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Mann	L(GE/Non-Oil GDP)	-2.111	L (Non-Oil GDP)	0.0936	0.5719

7.5. Empirical Results of Unit Roots and Cointegration Test

The preceding section presented the findings from the simple regression analysis as done in the original literature of each of the model presented. However, since then the sophistication of econometric analysis has advanced and as mentioned in Chapter 6, new methods of econometric analysis applied to the government expenditure growth related studies.

An important part of such sophistication is the time-series analysis based on the 'unit root test' and 'co-integration test'. As explained in Chapter 6, the unit root test in

this study aims to examine the properties of time series data for each of the following: government expenditure (LGE), gross domestic product (LGDP), gross domestic product per capita (LGDP/P), the level of population (P), the government expenditure ratio (LGE/GDP), and government expenditure per capita (LGE/P). Despite the multiplicity of the unit root tests, this study utilises Dickey - Fuller test (Dickey and Fuller: 1979), which is expressed in equation (7.42):

$$\Delta Y_t = a_0 + a_1 t + a_2 Y_{t-1} + \sum_{i=1}^k a_i Y_{t-i} + e_t \quad (7.42)$$

where:

Δ = the first difference of the series.

Y_t = is the series under consideration (GDP, government expenditures, or government revenues),

t = the time trend.

k = the number of lag.

e_t = is a stationary random error (white noise residual).

The hypotheses tested are:

H_0 : Unit root exists in Y : Y is non-stationary

H_1 : Unit root does not exist in Y : Y is stationary

As a rule, if we fail to reject the null hypothesis (H_0), and then we have a unit root process. If the outcome indicates that the series is stationary after the first difference; the series integrated of order one [$I(1)$], then cointegration test is performed. If the null hypothesis is accepted, the variable contains a unit root. Thus, the Augmented-Dickey-Fuller (ADF) procedure has used to test for unit roots.

While all variables under examination are time-series variables, the time-series properties of the series have to be examined. In order to avoid the problem of spurious regression, each series was tested to check if they were stationary. To do so, the ADF unit root tests is utilised with its critical value at 5% level of significance to accept or reject the null hypothesis.

Table (7.15.A) presents the calculated t-value from ADF tests on each variable in level and first differences in their logarithmic version. As can be seen from the depicted results, in the case of the levels of the series, the null-hypothesis of non-stationary cannot be rejected for any of the series. Thus, the levels of all series are non-stationary, but it is rejected with first differences, which suggests that these variables are $I(1)$.

Table 7.15.A: Augmented Dickey-Fuller for Stationary Unit Root Tests

Variables	ADF(0)	ADF(1)
L(GDP)	-3.44	-2.746
L(GEC)	-3.16	-2.067
L(GE)	-3.09	-2.757
L(GE/GDP)	-3.38	-1.994
L(GE/P)	-3.37	-2.970
L(GDP/P)	-3.44	-2.535
L(GE/Non-oil GDP)	-3.32	-2.571
L(Non-Oil GDP)	-3.41	-3.291
L(Non-Oil GDP/P)	-3.39	-3.894
5% C-Value	-3.493	-1.687

According to the result, each variable used in all six versions of Wagner's Law in Saudi Arabia for the period of 1968-2010 indicates that the series are non-stationary in level but stationary after the first difference.

Based on this test, it is concluded that all the variables tested (LGDP, LGE, LGEC, LGE/P, LGE/GDP, LGDP/P, LNON OIL GDP, LNON OIL GDP /P and LGE/NON OIL GDP) have contained a unit root. However, after the first difference the unit root problem disappeared in the model. Thus, applying ADF unit root tests (table 7.15.A), we found that each of the variables used in all six versions of Wagner's Law is I(1). These results are consistent with the standard theory, which assumes that most macroeconomic variables are not static level, but become stationary after the first difference.

In the next step, Cointegration test is applied to examine a long-run relationship between the variables by using OLS test, the results of which demonstrated in Table (7.15.B) for real GDP and Table (7.15.C) for non-oil real GDP.

Table 7.15.B: Cointegration Results for the Versions with Real GDP

Versions	Dependent Variables	Coefficient	t-Stat	Probability	R ²	DW
Peacock & Wiseman	LGE	1.034	11.12	0.026	0.932	0.912
Pryor	LGEC	1.157	10.86	0.041	0.863	0.920
Goffman	LGE	1.342	8.15	0.013	0.781	0.793
Musgrave	L(GE/GDP)	0.522	1.21	0.033	0.571	0.824
Gupta	L(GE/P)	1.081	12.01	0.004	0.825	0.844
Mann	(LGE/GDP)	0.287	1.92	0.029	0.497	0.885

Table 7.15.C: Cointegration Results for Non-Oil-Real GDP

Versions	Dependent Variables	Coefficient	T-Stat	Probability	R ²	DW
Peacock & Wiseman	LGE	1.103	50.33	0.008	0.951	0.919
Pryor	LGEC	1.682	19.99	0.076	0.963	0.906
Goffman	LGE	1.571	22.21	0.044	0.932	0.834
Musgrave	L(GE/Non Oil-GDP)	0.231	6.11	0.082	0.690	0.900
Gupta	L(GE/P)	1.097	42.01	0.012	0.758	0.724
Mann	(LGE/Non Oil-GDP)	0.104	5.89	0.092	0.683	0.855

Table (7.15.B) and (7.15.C) present the cointegration test results for time series for the period of 1968 to 2010 which examines the long run relationship between the Government Expenditure (GE) and economic growth measure i.e. Real GDP and Non Oil real-GDP in the Saudi economy. The results show that there is a long run relationship between the Government Expenditure (GE) and Economic Growth (GDP) for real GDP and non-oil real GDP in Saudi Arabia.

The variable used in all six versions of Wagner's Law for the period 1968–2010 indicates that the series are non-stationary in level, but stationary after the first difference, which suggests that they are I(1). The estimated results given in Tables (7.15.B) and (7.15.C) can be regarded as reliable in explaining the long-run relationship between government expenditure and economic growth. As shown in Tables (7.15.B) and (7.15.C), the real income elasticity for all the versions is greater than zero (i.e. more than one in case of absolute versions and more than zero in case of relative versions for both real GDP and Non-Oil real GDP). This confirms the validity of Wagner's Law in

relation to Saudi Arabia. In the long-run, one percent increase in GDP will lead to more than one percent growth in total government expenditure.

It should be noted that co-integration can be conducted by using Johansen Co-integrating test, the results of which presented in the following section.

7.5.1. Cointegration Test-Johansen Method

The concept of cointegration is that if the variables at the same level are of non-stationary form any package of first class variables (Table 7.15.A), if possible, to produce a linear combination is characterised by a static zero-class integrated I (0). In this case, the integrated real-time variables of the same level cointegrated; therefore, the level variables are not used in the regression, nor is the reduction in this case is a false spurious. The null hypothesis is that the variables under consideration are not cointegrated. The rejection of the null hypothesis requires that the trace value of the cointegration test be greater than, at least one of the independent-critical values. Therefore, the non-rejection of null hypothesis of no co-integration leads us to conclude that there is no relationship in the long-term equilibrium between government spending and national income. Co-integrating test in this study was conducted using the method developed by Johansen (1988), and Johansen and Juselius (1990).

Many studies used the Engle-Granger two-step test, but there are those Sinha (1998), Al- Hakami (2002) and Al-Qudair (2005), who used Johansen and Juselius (1990) test, which had advantages such as it tests for all of the variables and, secondly, all variables are treated as internal variables, so that the choice of the variable is not absolute. This procedure is the most reliable test for cointegration.

To determine whether stochastic trends in the series displayed relate to each other or not, cointegration test for all the six versions of Wagner's Law is conducted. In addition, after determining the order of integration by the Augmented Dickey Fuller test, it is tested whether the series is co-integrated or not, and if they are, then the cointegrating long-run equilibrium relationship has to be determined (Brooks, 2008).

This section, hence, tests and reports the findings of the test after the cointegration test (Real GDP) and Co-integration test (Non-Oil real GDP) by using Johansen cointegration test.

7.5.1.1 Cointegration Test with (Real GDP)

The existence of a cointegration vector is pointed out by a trace test since the t-test value exceeds the critical value of 5% level of significance. This means the cointegration tests are statistically significant at 5% level of significance for determining the long-run relationship between all variables. Otherwise, there is a long run equilibrium relationship between Real GDP and Government Expenditures. All versions of Wagner's Law (Peacock and Wiseman, Pryor, Goffman, Musgrave, Gupta and Mann) are tested in this section and it is found that the trace test indicates a level of significance at 5% significance level. At the trace statistic value in Table (7.16), we can reject the null hypothesis of cointegration in all versions of Wagner's Law, because the trace statistic values are greater than the critical value of 5%.

Table 7.16: Johansen Cointegration Test Results with Real GDP

Versions	Hypothesized No. of CE(s)	Eigen value	TraceStatistic	Critical Value 5%	Prob
Peacock & Wiseman	None	0.29806	22.5771	15.41	0.0000
	At most 1	0.18983	8.4206	3.76	0.0000
Pryor	None	0.28467	19.8538	15.41	0.0016
	At most 1	0.14899	6.4532	3.76	0.0004
Goffman	None	0.28090	21.6521	15.41	0.0000
	At most 1	0.08098	8.1780	3.76	0.0041
Musgrave	None	0.28622	21.7785	15.41	0.0000
	At most 1	0.18721	8.2911	3.76	0.0008
Gupta	None	0.28624	21.7771	15.41	0.0000
	At most 1	0.19021	8.2061	3.76	0.0015
Mann	None	0.29806	22.5771	15.41	0.0000
	At most 1	0.18983	8.4206	3.76	0.0000

The results provide definitive evidence that the real total government expenditure (GE) and real GDP are subject to an equilibrium relationship in the long-run.

7.5.1.2 Cointegration Test with (Non-Oil Real-GDP)

In the case of non-oil real-GDP, the Table (7.17) shows that there is a long run equilibrium relationship between non-oil real GDP and government expenditures as found in all versions (Peacock & Wiseman, Pryor, Goffman, Musgrave, Gupta and Mann) of Wagner's Law at 5% levels. Thus, the null hypothesis of cointegration is rejected in all versions of Wagner's Law with respect to non-oil real GDP, because the trace statistics values are greater than the critical value of 5%. Co-integrated relationships

exist for all six versions of Wagner's Law with respect to real non-oil GDP in the case of Saudi Arabia, an even stronger result indicating that the real total government expenditure and real non-oil GDP are subject to an equilibrium relationship in the long-run.

Table 7.17: Johansen Cointegration Test Results with Non-Oil Real-GDP

Versions	Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Value 5%	Prob
Peacock & Wiseman	None	0.26793	21.0726	15.41	0.0000
	At most 1	0.19341	8.5974	3.76	0.0000
Pryor	None	0.24684	18.2635	15.41	0.0000
	At most 1	0.15895	6.9244	3.76	0.0002
Goffman	None	0.33040	17.2814	15.41	0.0000
	At most 1	0.03049	1.2386	3.76	0.0007
Musgrave	None	0.29277	25.0288	15.41	0.0083
	At most 1	0.24370	11.1726	3.76	0.0201
Gupta	None	0.29277	25.0288	15.41	0.0083
	At most 1	0.24370	11.1726	3.76	0.0201
Mann	None	0.26793	21.0729	15.41	0.0026
	At most 1	0.19341	8.5974	3.76	0.0066

The Johansen and Juselius (1990) test show a cointegration relationship in all versions. Therefore, Granger-Causality thus in the framework of the Error Correction Model will be applied.

7.6. Causality Test for Wagner's Law

After making sure of the time series model that the variables are not stationary in the level and stationary in the difference, and then check it all-integrated joint, it is clear, that there is a long-term equilibrium relationship.

According to Engle and Granger (1987), the variables that integrate reflect a long-term relationship. This should be a representation of Error Correction Model (ECM), which helps to test and evaluate the relationship in the short and long term between the variables of the form, as it avoids problems arising from the spurious correlation. To apply the ECM for Wagner's Law in Saudi Arabia, the Granger-Causality is applied as follows:

- (i) In the context, of Error Correction Model (ECM) of the variables that is cointegrated.
- (ii) Standard Granger-Causal for the variables that do not cointegrated.

The following sections present the models and the empirical results for these two models.

7.6.1. Granger Causality Test

The Granger Causality Test is conducted through Engle and Granger approach, which has two phases:

- (i) Assessing the relationship model equilibrium in the long term or the joint integration.
- (ii) An Error Correction Model helps to reflect on the relationship in the short term or to reflect on the short-term volatility and also helps to locate the relationship in the long-term.

7.6.1.1. Granger Causality Test with Real GDP

After discussing the rationale for Granger Causality Test, the following section presents the findings for all the versions of Wagner's Law with real-GDP.

(i) Granger Causality Test for Peacock and Wiseman Version of Wagner's Law, 1968-2010

Table (7.18) presents the causality test result for Peacock and Wiseman version of the Wagner's Law for the period of 1968-2010 in the case of Saudi Arabia. The reported F-statistics is a standard test for the joint hypothesis that LGDP does not Granger Cause LGE.

As the results indicate, in Saudi Arabia, the probability for accepting the null-hypothesis is only 0.6% while the hypothesis is rejected by 99.4%, which means that there is a high statistical significance for LGDP causing LGE in Peacock and Wiseman's Version of Wagner's Law in the case of Saudi Arabia, which is consistent with Wagner's Law.

The causality from LGE to LGDP is also searched for, where the probability for accepting the null-hypothesis is only 15.9%, while 84.1% reject the hypothesis, which means LGE causes LGDP about 84.1% of the time.

Table 7.18: Granger Causality test for Peacock and Wiseman's Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP does not Granger Cause LGE	16.05	0.0060
LGE does not Granger Cause LGDP	3.6836	0.1590

(ii) Granger Causality Test for Pryor's Version of Wagner's Law, 1968–2010

Table (7.19) presents the Granger Causality test results for Pryor's version of Wagner's Law in the case of Saudi Arabia for the period 1968–2010. As can be seen, the probability of accepting the null-hypothesis that LGEC does not Granger Cause LGDP is only 0.3%, whilst the hypothesis is rejected with 99.7%, implying that LGEC causes LGDP around 99.7% of the time in Pryor's version in the case of Saudi Arabia. This result is consistent with Wagner's Law.

It should be noted that there is strong causality between LGDP and LGEC. The evidence for LGDP causing LGEC is determined using the standard test for joint hypothesis, reported F-statistics that LGDP does not Granger cause LGEC where the probability of accepting the null-hypothesis is only 12.4% and 87.6% of rejecting the hypothesis, which means LGDP causes LGEC around 87.6 %.

Table 7.19: Granger Causality test for Pryor Version's Real GDP

Null Hypothesis	F-Statistic	Prob.
LGEC does not Granger Cause LGDP	16.889	0.0030
LGDP does not Granger Cause LGEC	3.1723	0.1240

(iii) Granger Causality Test for Goffman's Version of Wagner's Law, 1968–2010

The results of the causality test for Goffman's version of Wagner's Law based on probability values from the Granger Causality Test can be seen in Table (7.20).

The probability of accepting the null-hypothesis that LGDP/P does not Granger Cause LGE is 0.7%, implying that this hypothesis is rejected by 99.3%. Hence, LGDP/P causes LGE around 99.3% of the time in Coffman's Version, which is consistent with Wagner's Law.

On the other direction of the causality, the probability of accepting the null-hypothesis that LGE does not Granger Cause LGDP/P is 34.7% and 65.3% reject this hypothesis, which means that LGE causes LGDP/P around 65.3% of the time. This also indicates the existence of strong causality between LGE and LGDP/P in the long run as shown in Table (7.20).

Table 7.20: Granger Causality test for Goffman's Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP/P does not Granger Cause LGE	9.9422	0.0070
LGE does not Granger Cause LGDP/P	2.1172	0.3470

(iv) Granger Causality Test for Musgrave's Version of Wagner's Law, 1968–2010

The results of the Granger Causality test for Musgrave's version of Wagner's Law is presented in Table (7.21), which shows that the null-hypothesis that LGDP/P does not Granger Cause LGE/GDP is accepted with the probability of 0.8%, whilst it is rejected by 99.2%. This implies that LGDP/P causes LGE/GDP around 99.2% of the time in Musgrave's version, which is consistent with the expectation of Wagner's Law.

It should be noted that the results in Table (7.21) also indicate strong causality between LGE/GDP and LGDP/P in the long run. The probability of accepting the null-hypothesis that LGE/GDP does not Granger Cause LGDP/P is 11.6%, which is rejected by 88.4%. This means that LGE/GDP causes LGDP/P around 88.4% of the time.

Table 7.21: Granger Causality Test for Musgrave's Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP/P does not Granger Cause LGE/GDP	9.5692	0.0080
LGE/GDP does not Granger Cause LGDP/P	4.3099	0.1160

(v) Granger Causality Test for Gupta's Version of Wagner's Law, 1968–2010

The results in Table (7.22) show the probability for accepting the null-hypothesis that LGDP/P does not Granger cause LGE/P is only 0.3%, which means that LGDP/P causes LGE/P around 99.7% of the time in Gupta's version. This, again, is consistent with the observation of Wagner's Law.

An investigation of the opposite direction of the causality indicates the probability of accepting the null-hypothesis that LGE/P does not Granger cause LGDP/P is 11.6%. Hence, it can be inferred that LGE/P causes LGDP/P around 88.4% of the time suggesting a strong causality.

Table 7.22: Granger Causality Test for Gupta's Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP/P does not Granger Cause LGE/P	15.331	0.0030
LGE/P does not Granger Cause LGDP/P	4.3099	0.1160

(vi) Granger Causality Test for Mann's Version of Wagner's Law, 1968–2010

The Granger Causality test results for Mann's version of Wagner's Law are presented in Table (7.23). The probability of accepting the null-hypothesis that LGDP does not Granger Cause LGE/GDP is 0.8%. This implies a strong causality between LGDP and LGE/GDP with the probability of 99.2%, which again verifies the original observation of Wagner's Law.

As to the opposite side of the causality, the result obtained in Table (7.23) shows moderate level evidence of the existence of feedback causality between LGE/GDP and LGDP in the long run. The probability of accepting the null-hypothesis that LGE/GDP does not Granger Cause LGDP is 41.3%, which means LGE/GDP causes LGDP around 58.7 % of the time and causality between the variables.

Table 7.23: Granger Causality Test for Mann's Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP does not Granger Cause LGE/P	9.74	0.0080
LGE/P does not Granger Cause LGDP	1.766	0.4130

It can be concluded that most variants of Wagner's Law produced positive results for Granger Causality from economic growth and government expenditure variables. The results the most variants of Wagner's Law also evidenced for causality from government expenditures to economic growth. Therefore, in such cases, bi-directional causality is found.

7.6.1.2. Granger Causality Test with Real Non-Oil GDP

After presenting the causality test results for Wagner's Law for real GDP, the following section presents the Granger Causality Test results for non-oil real GDP for the period of 1968-2010 in Saudi Arabia..

(i) Granger Causality Test for Peacock and Wiseman Version of Wagner's Law, 1968-2010

Table (7.24) presents the causality test result for Peacock and Wiseman version of the Wagner's Law. The reported F-statistics are standard test for the joint hypothesis that L Non-Oil GDP does not Granger Cause LGE. As can be seen, the probability for accepting the null-hypothesis is only 0.1% while the probability for rejecting the null-hypothesis is 99.9%. This implies that L Non-Oil GDP causes LGE by around 99.9% of

the time in Peacock and Wiseman's Version, which is consistent with the expectations of Wagner's Law.

In the feedback of causality from LGE to L Non-Oil GDP shows that the probability for accepting the null-hypothesis is 52.6%, which means that LGE causes L Non-Oil GDP by the probability level of 47.4% indicating a moderate level of causality.

Table 7.24: Granger Causality test for Peacock and Wiseman Version with Non- Oil Real GDP

Null Hypothesis	F-Statistic	Prob.
L Non-Oil GDP does not Granger Cause LGE	16.148	0.0010
LGE does not Granger Cause L Non-Oil GDP	1.2849	0.526

(ii) Granger Causality Test for Pryor's Version of Wagner's Law, 1968-2010

The probability for accepting null-hypothesis that LGEC does not Granger cause LN Non-Oil real-GDP is 0.6% while it is rejected by 99.4%. The implications of this are that LGEC causes L Non-Oil real-GDP with the probability of 99.4% in Pryor's version of the Wagner's Law. This result is consistent with Wagner's Law to some extent. However, there is strong feedback causality in the opposite direction between L Non-Oil GDP and LGEC. The evidence that L Non-Oil real GDP causes LGEC is determined by using the standard test for the joint hypothesis reported F-statistics, for which the probability of accepting the null-hypothesis is 13.9%. Thus, L Non-Oil GDP causes LGEC with the probability of 86.1 % as depicted in Table (7.25).

Table 7.25: Granger Causality test for Pryor Version with Non- Oil Real-GDP

Null Hypothesis	F-Statistic	Prob.
L Non-Oil GDP GEC does not Granger Cause L GEC	15.578	0.0060
L GEC does not Granger Cause L Non-Oil GDPGEC	3.2816	0.1390

(iii) Granger Causality Test for Goffman's Version of Wagner's Law, 1968-2010

Table (7.26) present the findings of the causality test based on probability values from Granger Causality Test for Goffman's version of the Wagner Law. The Null-Hypothesis that L Non-Oil GDP/P does not Granger cause LGE is accepted with the probability of 0.1% indicating a strong case for the causality between L Non-Oil GDP/P and LGE with a probability of 99.9%. The results indicate that Goffman's version of

Wagner's Law is consistent with the expectation of Wagner's Law in the case of Saudi Arabia for the period of 1968-2010.

As regards to the opposition directional causality, the direction of causality from LGE to L Non-Oil GDP/P is rejected with the probability of 27.7% and hence implying that it is accepted with a probability of 72.3%. Thus, the result of causality test indicates the existence of strong feedback causality between LGE and L Non-Oil real GDP/P in the long run as shown in Table (7.26).

Table 7.26: Granger Causality test for Goffman Version with Non- Oil Real-GDP

Null Hypothesis	F-Statistic	Prob.
L Non-Oil GDP /P does not Granger Cause LGE	14.514	0.0010
L GE does not Granger Cause L Non-Oil GDP/P	2.5677	0.277

(iv) Granger Causality Test for Musgrave's Version of Wagner's Law, 1968-2010

The result of causality test based on probability values from Granger Causality test for Musgrave's version of Wagner's Law is presented in Table (7.27). The probability for accepting the null-hypothesis that L Non-Oil GDP/P does not Granger Causality LGE/Non-Oil GDP is 2.5%. This implies that L Non-Oil GDP/P causes LGE/Non-Oil GDP with the probability of 97.5% in the case of Musgrave's version of Wagner's Law. This result is in line with the prediction of Wagner's Law.

The results depicted in Table (7.27) also presents medium level evidence of the existence of strong feedback causality between LGE/Non-Oil GDP and L Non-Oil GDP/P in the long run with the probability level of 48.6%.

Table 7.27: Granger Causality test for Musgrave Version with Non- Oil Real-GDP

Null Hypothesis	F-Statistic	Prob.
LNon-Oil GDP /P does not Granger Cause L GE / Non-Oil GDP	7.3546	0.025
L GE/ Non-Oil GDP does not Granger Cause LNon-Oil GDP /P	1.3316	0.514

(v) Granger Causality Test for Gupta's Version of Wagner's Law, 1968-2010

As can be seen in Table (7.28), the probability for accepting the null-hypothesis that L Non-Oil GDP/P does not Granger Cause LGE/P is only 1.6%. Thus, the existence of the causality running from non-oil GDP to per capita government expenditures is accepted with the probability of 98.4%. This also validates the prediction

of Wagner's Law. As to the oppositional causality, as the results indicate, the Granger Causality from LGE/P to L Non-Oil GDP/P is accepted with the probability of 68.2%.

Table 7.28: Granger Causality test for Gupta Version with Real Non- Oil GD

Null Hypothesis	F-Statistic	Prob.
L Non-Oil GDP/P does not Granger Cause L GE/P	8.3048	0.0160
L GE/P does not Granger Cause L Non-Oil GDP/P	2.2884	0.318

(vi) Granger Causality Test for Mann's Version of Wagner's Law, 1968-2010

As the results in Table (7.29) shows the Granger causality from L Non-Oil GDP to LGE/Non-Oil GDP is accepted with the probability level of 97.6%, indicating a very strong causality, which verifies the prediction of Wagner's Law.

As to the opposite side of the causality, the results in Table (7.29) shows that the causality from LGE/Non-Oil GDP to L Non-Oil GDP does not suggest a strong relationship as the null-hypothesis accepted 52.6%, which means that LGE/Non-Oil GDP causes L Non- Oil GDP around 47.4 % of the time in the case of Saudi Arabia.

Table 7.29: Granger Causality test for Mann Version with Real Non- Oil GDP

Null Hypothesis	F-Statistic	Prob.
LNon-Oil GDP does not Granger Cause L GE/Non-Oil GDP	7.4318	0.024
L GE /Non-Oil GDP does not Granger Cause LNon-Oil GDP	1.2849	0.526

It can therefore be concluded that most variant of the Wagner's Law produced positive results for Granger Causality from economic growth and government expenditure variables. The similar results in most variants of the Wagner Law are also established for the causality from government expenditures to economic growth. In such cases, thus, bi-directional causality is found.

The next section, extend the analysis into Error Correction Mechanism to find out the short-run adjustment.

7.6.2. Error Correction Model (ECM)

The concept of error correction is related to cointegration, because the cointegration relationship describes the long-run equilibrium. If a set of variables has cointegrated, then there exists an Error Correction Model (ECM) to describe the short-run adjustment to the equilibrium (Engle and Granger, 1987).

The incidence of mutual co-integration between variables indicates that the Granger must be causal in one direction, at least, but the rules of engagement do not refer to the direction of causality between the variables. Thus, to verify the rules of engagement, tests of causation are tested in this section in the context of (ECM).

In addition, the t-statistics on the coefficients of the lagged error correction term (ECT_{t-1}) should indicate the significance of long-run causality between the two variables. The statistical significance of the t-statistics in tests should be at most 5%.

7.6.2.1. Error Correction Model (ECM) with Real GDP

The results of ECM with real GDP is depicted in Table (7.30), which show that there is long-run bi-directional causality that runs from GDP to GE in Peacock & Wiseman's version; from GDP to GEC in Pryor's version; from GDP/P to GE in Goffman's version; from GDP/P to GE/GDP in Musgrave's version; from GDP/P to GE/P in Gupta's version; and from GDP to GE/GDP in Mann's version. This result is the product of the process that as depicted in Table (7.30), GE, GEC, GE/GDP, and GE/P are all statistically significant at the 5% level. Thus, six versions of Wagner's Law are found to hold in the case of Saudi Arabia.

In the Error Correction Model (ECT_{t-1}) the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality, which runs from Economic Growth (GDP) to Government Expenditure (GE).

Table 7.30: Causality with ECM test with Real GDP

Versions	Variables	ECT_{t-1}	t-Stat
Peacock & Wiseman	L(GE)	-0.321322	-2.92
	L(GDP)	0.501030	1.19
Pryor	L(GEC)	- 0.571306	- 3.62
	L(GDP)	0.501030	1.19
Goffman	L(GE)	-0.21070	-2.39
	L(GDP/P)	0.500729	2.09
Musgrave	L(GE/GDP)	-0.89640	-2.28
	L(GDP/P)	0.588325	1.38
Gupta	L(GE/P)	-0.308073	-2.77
	L(GDP/P)	0.588326	1.38
Mann	L(GE/GDP)	-0.822166	-2.59
	L(GDP)	0.501033	1.19

7.6.2.2. Error Correction Model (ECM) with Non-Oil Real-GDP

An attempt also made to find the ECM test results for non-oil real-GDP, the results of which are depicted in Table (7.31). The results show that there is long-run bi-directional causality that runs from Non-Oil-GDP to GE in Peacock and Wiseman version; from Non-Oil-GDP to GEC in Pryor's version; from Non-Oil-GDP/P to GE in Goffman's version; from Non-Oil-GDP/P to GE/ Non-Oil-GDP in Musgrave's version; from Non-Oil-GDP/P to GE/P in Gupta's version, and from Non-Oil-GDP to GE/ Non-Oil-GDP in Mann's Version of Wagner's Law. This result is a product of empirical analysis which indicates that the variables used in each of the model GE, GEC, GE/Non-Oil-GDP, and GE/P are statistically significant at the 5% level. Thus, six versions of Wagner's Law are found to hold for non-oil-GDP in the case of Saudi Arabia.

Table 7.31: Causality with ECM test with Non-Oil Real GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.5824323	-3.52
	L(Non-Oil GDP)	-0.1989443	-1.67
Pryor	L(GEC)	-0.0344679	-0.42
	L(Non-Oil GDP)	0.0861542	2.95
Goffman	L(GE)	0.0534302	3.40
	L(Non-Oil GDP/P)	0.0381747	3.96
Musgrave	L(GE/ Non-Oil GDP)	-0.0009502	-0.95
	L(Non-Oil GDP/P)	-0.0028346	-3.69
Gupta	L(GE/P)	-0.0037831	-3.07
	L(Non-Oil GDP/P)	-0.0028333	-3.69
Mann	L(GE/ Non-Oil GDP)	-0.3834886	-3.09
	L(Non-Oil GDP)	-0.1989445	-1.67

7.7. CONTEXTUALISING THE RESULTS

Various studies have aimed to explain and validate Wagner's Law in many countries either through time-series or cross section methods. Wagner (1883:8) noted that "There is a proportion between public expenditure and national income which may not be permanently overstepped".

In our findings, the cointegration results suggest that Wagner's Law holds in Saudi Arabia, and that there is strong feedback causality for all versions. Moreover, the Error Correction Model (ECM) establishes that all six versions of Wagner's Law are found to be significant for both real GDP and non-oil-GDP in the case of Saudi Arabia, implying short-run adjustment process towards long-run equilibrium.

Similar results were reached, for example, by Biswal and Lee (1999). From a different perspective, Asutay and Al Fazari (2007) investigated but provided no evidence for the impact of government spending on GDP in Oman by using time-series data from 1971 to 2002. Their results supported causality between government expenditure and GNP per capita.

Moreover, Abizadeh and Yousefi (1998) used Wagner's Law to examine the effect of government expenditure on economic development in South Korea by modelling the relationship through causality tests. Their research supported Wagner's Law, as it studies. Furthermore, they confirmed the finding of Al-Hakami (2002) in a trivariate model, when GDP was added. However, the results are in contrast with Al-Hakami (2002) and Albatel (2002), who, in the case of Saudi Arabia, found that there is a strong feedback causality that runs from government revenues to government expenditure.

7.8. CONCLUSION

This chapter analysed empirically the relationship between government expenditure and economic growth. Wagner's Law was examined – six versions that were developed over the years – in the case of Saudi Arabia by using time-series annual data for the period 1968–2010.

In the empirical analysis, three distinct time-series techniques were applied to test the six versions of Wagner's Law by using Ordinary Least Square (OLS) for real GDP and non-oil GDP. The unit root tests were utilised using the Augmented Dickey-Fuller for determining the existence of stationary for real GDP and non-oil GDP. The

Cointegrating test for real GDP and non-oil GDP was also utilised. Finally, it was considered the Granger causality tests and the Error Correction Model (ECM).

The results of the regression analysis – for six versions of Wagner's Law using OLS for real GDP and non-oil real GDP – show that the elasticity coefficient of government expenditure, with respect to GDP, was greater than unity in Peacock and Wiseman (1968), Pryor (1969), Goffman (1968), and Gupta (1967). Thus, the findings in the case of these four versions are in accordance with Wagner's expectation. The empirical results also indicate that the elasticity coefficient of government expenditure, with respect to GDP, is inelastic in the case of Musgrave's (1969) and Mann's (1980) versions of Wagner's Law, although their independent variable is still statistically significant. Nagarajan and Spreares (1990), furthermore, stated that in order to verify Wagner's Law, the income elasticity needs to be $E > 1$, i.e. greater than unity, and the ratio income elasticity needs only be $E > 0$, i.e. greater than zero. According to this rule, Mann's version of Wagner's Law does not hold in the case of Saudi Arabia.

As regards non-oil real GDP – the independent variable in the versions of Wagner's Law – Peacock and Wiseman provide support for Wagner's Law, whilst Pryor's, Musgrave's and Mann's versions do not hold for Saudi Arabia. In addition, since elasticity is greater than unity in the results of Goffman's model, this version of Wagner's Law is consistent for Saudi Arabia. Moreover, Gupta provides evidence for Wagner's Law in the case of Saudi Arabia; the expected elasticity is higher than a unit, i.e. $E > 1$. Moreover, since the income elasticity needs to be higher than a unity ($E > 1$), and the ratio income elasticity is expected to be higher than zero ($E > 0$), Mann's version does not provide evidence for Wagner's Law in Saudi Arabia.

In extending the analysis, the unit root test in the form of Augmented Dickey-Fuller is utilised to examine stationarity of the time-series of all the variables. The results indicate that the levels of all series are non-stationary, and hence all the variables are cointegrated at first order $[I(1)]$.

The results suggest that there is a co-integrating relationship between government expenditure and GDP per capita, and Wagner's Law holds in the case of Saudi Arabia through the cointegration analysis. Therefore, the equilibrium relationship indicates that the major determinant of government expenditure in Saudi Arabia, in the long run, is national income.

The econometric analysis further employs the Granger causality test in order to verify the causality and its direction between the variables. The results demonstrate statistically significant evidence in favour of per capita GDP for the long-run relationship. In addition, it is found that Granger-causing the share of government expenditure in GDP. This finding is consistent with the expectation of Wagner's Law. Thus, the result of the causality test indicates the existence of strong feedback causality for all versions of Wagner's Law in the long run.

Lastly, by using the Error Correction Model (ECM), it is established that all the six versions of Wagner's Law are significant for both real GDP and non-oil-GDP in the case of Saudi Arabia. This suggests a short-run adjustment process towards long-run equilibrium.

CHAPTER 8

LOCATING KEYNESIAN RELATIONS IN ECONOMICGROWTH AND GOVERNMENT EXPENDITIURES NEXUS IN SAUDI ARABIA

8.1. INTRODUCTION

Keynesian policies are considered a new attempt in the modern times allowing government back into economic equilibrium, as he recognised and attached important role for fiscal policy in affecting the aggregate demand. As part of the dynamic fiscal policy, Keynes suggested that the government should ‘revive’ the economy by increasing public expenditure or tax cuts during economic recession, which, he suggested would increase the aggregate demand to keep the economy moving towards equilibrium. Thus, in the Keynesian political economy, fiscal policy and particularly government expenditures work as an ‘invisible hand of capitalism’. Such government intervention mostly is paid by budget deficits during recession times implying that the government spends more than their resources (Keynes, 1936). For Keynes this did not mean the rejection of capitalism or its working mechanism, but rather using fiscal policy meant the salvation of capitalism. Due to such views raised by Keynes, Virginia School and in particular Buchanan (1977) accused Keynes for the ever growing government in the Western societies by labelling this as the ‘legacy of Keynes’.

The data used in this empirical chapter aims to analyze the relationship between government expenditure and economic growth in Saudi Arabia within the Keynesian relation with time series annual data for the period of 1968 to 2010. The rest of the chapter is organised as follows: section one, presents some empirical results of relevant theoretical and empirical literature on the relationship between government expenditure and economic growth in Keynesian relation. Section two, presents the three versions of Keynesian relations and their formulae. Section three, investigates the data and empirical results and analysis by using the methods, mentioned in Chapter 6, while section four presents the results of analysis by using the time series techniques. Lastly, section five, concludes the chapters and presents the finding.

8.2.THE KEYNESIAN RELATION

The Keynesian argument is in favour of effective government expenditure and fiscal policy to stabilise the economy during recession times (Keynes, 1936). His arguments that the government not only could but should use public expenditure as a tool of economic policy to manage a national economy and to counteract unemployment found ready acceptance in a world in 1930s that had not yet recovered from the great depression.

Keynesian theory emerged in the economy through a critical period of world history, namely between the World Wars, I and II, overshadowed by the Great Depression. The Keynesian theory came to oppose the classical theory in the economy, developed since Adam Smith. Keynes (1933) supported the idea that there is an effective role to be played by fiscal policy and government expenditures for economic growth.

Keynes' economic policy prescriptions helped the world economy to recover after the great depression and therefore had been used as part of economic policy making effectively until 1960s in the industrialised world. However, due to the nature of capital shortage in the developing countries, one way or another developmentalism need necessitated an active or passive Keynesian policy to be pursued, as with the Saudi Arabian government's direct involvement in the economy over the years.

It should, however, be noted that Keynes' theory was not designed to analyse the problems of developing countries, but focused only on the economic stagnation in the industrialised countries in 1930s. Keynesian idea of aggregate demand and its role in the economy in stabilising the economy was central to his argument, as he considered that total income is a function of the level of operation in any country, and hence the greater the scale of operation, the greater the total income. Therefore, he suggested expansionary economic policies through fiscal policy for the growth of the economy. Due to the nature of economic policies suggested by Keynes, it can be applied for the developing countries which are in need of economic growth. Within such a convergence in ideas, then Keynesian tools for developing economies can include the following:

(i) Effective demand: According to Keynes, unemployment occurs because of a lack of effective demand and to eliminate unemployment Keynes proposed an increase in both consumption and investment to boost the effective demand to overcome recession and result in economic growth. Thus, the importance of aggregate demand and expansion in national income through fiscal policies for developing countries as well.

(ii) Marginal efficiency of capital: Keynes considered that the marginal efficiency of capital is one of the key determinants of investment, as there is an inverse relationship between investment and the efficiency of capital. Thus, he suggested that economic policy making has to strike a balance in resource allocation by taking into account the marginal efficiency of capital. This again is an issue for developing countries.

(iii) Interest rate: Keynes re-analysed the effect of the interest rate on investment. In the classical model, the supply of funds (saving) determined the amount of fixed business investment. That is, since all savings was placed in banks, and all business investors are considered to be in need of borrowing funds go to the banks, the amount of savings determine the amount that was available to invest. To Keynes, the amount of investment was determined independently by long-term profit expectations and, to a lesser extent, the interest rate.

In sum, a crucial aspect of Keynesian theory is its recognition of the importance of fiscal policy in overcoming economic stagnation, by increasing spending or tax cuts. He was convinced that otherwise the economy will be unable to correct itself. This is in contrast to the classical theory, which is based on the principle of non-intervention. Keynes, thus, acknowledged the occurrence of balance at any level of economic operation, and therefore called for state intervention to treat causes of the crises that might hinder the national economy.

8.3. SURVEYING EMPIRICAL STUDIES ON KEYNESIAN RELATION

In the relatively large body of knowledge, Ansari *et al.* (1997) investigated the Granger causality test to test the income-government expenditure hypothesis for three African countries; and found that the hypothesis of public expenditure causing national income was not supported by the data for these African countries.

Another study by Samudram *et al.* (2009) tested the Keynesian Relation and Wagner's Law on the role of government expenditure on economic growth for Malaysia during the period of 1970–2004. They used the Auto-Regression Distributed Lag (ARDL) model to explain the evidence of a long run relationship between Government Expenditure and Gross National Product (GNP). Their results show that the long run relationship is bi-directional for GNP and Government Expenditure on administration and health, with the structural break in 1998. Thus, they found supporting evidence by for Keynesian Relation and Wagner's Law.

Tang (2008) investigated the relationship between government expenditure and

economic growth in the light of Wagner's Law and the Keynesian Relation in Malaysia. The results indicate that the relationship between government expenditure and economic growth are not stable. The causality supports Wagner's Law during 1985 to 2000, while the Keynesian Relation was present only before 1980.

Biswalet *al.* (1999) tested Wagnerian versus Keynesian Relation by investigating the relationship between national income and total government expenditure for Canada from 1950-1995. They used the two econometric methods, Engle – Granger, two-step Co-integration, and Error Correction Models (ECM). Their findings support the Keynesian hypotheses, which produced evidence for short-run causation implying that national income has increased by increase in government expenditure in the short run. Likewise, Azam (1998) tested the Keynesian relation by reversing the Gupta's definition to see the effect of government expenditure on GNP. He obtained the same result by using differenced variables.

As the recent sample literature demonstrates, the results are mixed in the case of Keynesian relation. This study aims to contribute to the literature by searching for evidence for Keynesian Relation in the case of Saudi Arabia.

8.4. FORMULATING THE VERSIONS OF KEYNESIAN RELATIONS AND APPLYING ECONOMETRIC METHODOLOGY

In modelling the Keynesian Relation, three versions of Wagner's Law as depicted in Table 8.1 are reversed as displayed in Table 8.2. These formulations are based on real GDP.

Table 8.1: The Original Three Versions of Wagner's Law

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(GDP)$	Peacock-Wiseman	1967
2	$L(GE) = \alpha + \beta L(GDP / P)$	Goffman	1968
3	$L(GE/P) = \alpha + \beta L(GDP / P)$	Gupta &Michas	1967 & 1975

Table 8.2: Three Versions of Keynesian Relations with Real GDP

No	Function	Version	Year
1	$L(GDP) = \alpha + \beta L(GE)$	Peacock-Wiseman	1967
2	$L(GDP/P) = \alpha + \beta L(GE)$	Goffman	1968
3	$L(GDP/P) = \alpha + \beta L(GE/ P)$	Gupta &Michas	1967 & 1975

The Keynesian Relation is also formulated with non-oil GDP as in Table 8.3):

Table 8.3: Three Versions of Keynesian Relations with Real Non-Oil Sector of GDP

No	Function	Version	Year
1	$L(\text{Non-Oil GDP}) = \alpha + \beta L(\text{GE})$	Peacock-Wiseman	1967
2	$L(\text{Non-Oil GDP} / P) = \alpha + \beta L(\text{GE})$	Goffman	1968
3	$L(\text{Non-Oil GDP} / P) = \alpha + \beta L(\text{GE} / P)$	Gupta & Michas	1967 & 1975

As regards to the econometric methodology, OLS is employed to determine the parameters in the equations. This is followed by time-series analysis in the form of Unit Root and cointegration test.

The Unit Root test aims to examine the properties of time series annual data for each of the following: government expenditures (LGE), gross domestic product (LGDP), gross domestic product per capita (LGDP/P), Population, the ratio LGE to GDP, and government expenditure per capita (LGE/P) for the period 1968-2010. To test the stationary time series model for the study variables, it requires the unit root test (Enders, 1995). Despite the multiplicity of the unit root tests, Dickey-Fuller (Dickey and Fuller: 1979) is employed which is expressed as in equation(8.1):

$$\Delta Y_t = a_0 + a_1 t + a_2 Y_{t-1} + \sum_{i=1}^k a_i Y_{t-i} + e_t \quad (8.1)$$

where:

Δ = the first difference of the series.

Y_t = Is the series under consideration (GDP, government expenditures, or government revenues);

t = the time trend;

k = the number of lag.

e_t = is a stationary random error (whitenoise residual).

The hypotheses for unit root tests are:

H_0 : Unit root exists in Y : Y is non – stationary

H_1 : Unit root dose not exists in Y : Y is stationary

Cointegration test in this study follows the method developed by Johansen (1988), and Johansen and Juselius (1990). Many studies used the Engle Granger two-step, but there are those who use Johansen and Juselius(1990), for so many advantages, such as first, that tests for all the variables and, secondly, all variables are treated as internal variables, so that the choice of the variable is not arbitrary. This procedure is the most reliable test for cointegration. To determine whether stochastic trends in series have related to each other or not, cointegration test is conducted for all the three versions. In addition, after determining the order of integration by Augmented Dickey Fuller test, test

is conducted to find whether the series are cointegrated or not, and if they are, the cointegrating long-run equilibrium relationship has to be identified (Brooks, 2008).

According to Engle and Granger (1987), the variables that integrate common equilibrium reflect a long-term relationship, which can be modelled through Error Correction Model (ECM). ECM has the potential to test and assess the relationship in the short and long term between the variables of the form, as it avoids problems arising from the spurious correlation. To apply the ECM for Keynesian Relation in Saudi Arabia, Granger-causality test is utilised.

As regards to the Granger Causality Test, it is conducted through Engle and Granger approach, which has two phases:

- (i) Assessing the relationship model equilibrium in the long term or the joint integration;
- (ii) An Error Correction Model helps to reflect on the relationship in the short term or to reflect on the short-term volatility and also helps to locate the relationship in the long-term.

As regards to the ECM, it is related to co-integration as the co-integration relationship describes the long run equilibrium. If a set of variables is co-integrated, then there exists an error correction model to describe the short run adjustment to equilibrium (Engle and Granger, 1987).

The incidence of mutual co-integration between the variable indicates that the Granger must be causal in one direction, at least, but the rules of engagement does not refer to the direction of causality between the variables. To verify the rules of engagement tests of causation is conducted in the context of ECM. With regard to periods of lag length, the same lag length is used for each version of Keynesian Relations, as was used in co-integration.

In addition, the t-statistics on the coefficients of the lagged error correction term (ECT_{t-1}) indicates the significance of the long-run causality between the two variables. The statistical significance of the t-statistics should be at most 5% level.

8.5. SEARCHING FOR KEYNESIAN RELATIONS IN SAUDI ARABIA

After identifying the econometric modelling and methodology, this section provides the findings through each stage by commencing with the OLS results.

8.5.1. Ordinary Least Square (OLS) Results

In presenting the results for OLS method, initially the results with real GDP is presented in the case of three identified model as defined above.

8.5.1.1. Testing Keynesian Relation with Real GDP

In this section, the results for three identified model with real GDP is presented.

(i) Peacock-Wiseman (1967) version of Keynesian Relation

The estimated model of Peacock and Wiseman version of the Keynesian Relation model is presented for the period of 1968-2010, as follows in equation (8.2):

$$L(GDP) = 3.5575 + 0.81375 L(GE) \quad (8.2)$$

(7.40) (19.14)

The figures between parentheses are t- statistics for each estimated measure and intercept, which indicates statistically significant result. The estimated results in equation (8.2) provides the elasticity of government expenditures through its coefficient, as $E = 0.81375 > 0$, which implies that an increase of 1% unit in GE or government expenditures generates a 0.81375% unit increase in the GDP. As can be seen in table 8.4., the model through independent variable explains 90.16% of the variations in GDP, leaving only 9.84% to be explaining by the stochastic disturbance term e (table 8.4).

Table 8.4: Regression Results for Peacock & Wiseman Version of Keynesian Relation

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Peacock & Wiseman	L(GDP)	3.5575	L (GE)	0.81375	0.9016

(ii) Goffman (1968) version of Keynesian Relation

The estimated Goffman version of Keynesian Relation for the period of 1968-2010 for Saudi Arabia is as follows:

$$L(GDP/P) = 4.792 + 0.479 L(GE) \quad (8.3)$$

(8.10) (9.08)

The t- statistics are provided in the brackets below the equation (8.3); and it indicates that GE is a statistically significant variable. The growth rate or the elasticity of government expenditure is estimated as $E = 0.479 > 0$. This indicates that 1% unit increase in GE generates a 0.479% unit increase the GDP per capita (GDP/P). As depicted in Table (8.5), the independent variable (GE) explains 67.34% of the variations in GDP/P, leaving only 32.66% to be explaining by the stochastic disturbance term e .

Table 8.5: Regression Results for Goffman Version of Keynesian Relation

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Goffman	L(GDP/P)	4.792	L (GE)	0.479	0.6734

(iii) Gupta (1967) version of Keynesian Relation

The Gupta version of the Keynesian Relation is estimated for the period of 1968-2010 for Saudi Arabia with real GDP and the result is depicted in equation (8.4) as follow:

$$L(GDP/P) = 3.663 + 0.747 L(GE/P) \quad (8.4)$$

(6.53) (11.58)

The t- statistics in brackets show statistically significant result for per capita GE for each estimated measure and intercept. The elasticity of GE per capita being $E = 0.747$ implies that an increase of 1% unit in government expenditure per capita GE/P generates a 0.747% unit increase in the GDP per capita (GDP/P). As the coefficient of determination in Table (8.6) indicates, the independent variable (GE/P) explains 77% of the variations in GDP/P , leaving only 23% to be explaining by the stochastic disturbance term e (Table 8.6).

Table 8.6: Regression Results for Gupta Version of Keynesian Relation

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Gupta	L(GDP/P)	3.663	L (GE/P)	0.747	0.7703

8.5.1.2. Testing Keynesian Relation with Non-Oil Real GDP

This section presents the results of the OLS analysis for the Keynesian Relation through the identified models with non-oil GDP.

(i) Peacock-Wiseman (1967) Version of Keynesian Relation

The Peacock and Wiseman version of Keynesian relation with non-oil real GDP is presented as follows in equation (8.5):

$$L(\text{Non-Oil-real GDP}) = 1.9866 + 0.90945 L(GE) \quad (8.5)$$

(16.52) (85.43)

The results, thus, indicates that GE is a statistically significant variable, with an elasticity of 0.90 which implies that a 1% unit increase in GE generates a 0.90945 % unit increase the non-oil real GDP. The independent variable (GE) explains 99.45% of the

variations in non-Oil real GDP, leaving only 0.55% to be explaining by the stochastic disturbance term e (Table 8.7).

Table 8.7: Regression Results for Peacock and Wiseman Version of Keynesian Version

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Peacock & Wiseman	L(GDP)	1.9866	L (GE)	0.90945	0.9945

(ii) Goffman (1968) Version of Keynesian Relation with non-oil GDP

The Goffman version of Keynesian version is estimated for Saudi Arabia for the period of 1968-2010 with non-oil real GDP and the results are:

$$L(\text{Non-Oil real GDP}/P) = 3.22157 + 0.57139L(\text{GE}) \quad (8.6)$$

(13.01) (26.08)

The t- statistics in parentheses indicates that GE is a significant variable with an elasticity of 0.57 which implies that 1% unit increase in GE results in 0.57139% unit increase the non-oil per capita GDP. The independent variable (GE) explains 99.45% of the variations in Non-Oil real GDP/P, leaving only 0.55% to be explaining by the stochastic disturbance term e (Table 8.8).

Table 8.8: Regression Results for Goffman Version of Keynesian Relation

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Goffman	L(Non-Oil real GDP/P)	3.22157	L (GE)	0.57139	0.9445

(iii) Gupta (1967) Version of Keynesian Relation with non-oil GDP

The Gupta version of Keynesian version is also estimated for Saudi Arabia for the period in question, as follows in equation (8.7):

$$L(\text{Non-Oil real GDP}/P) = 2.19671 + 0.85847 L(\text{GE}/P) \quad (8.7)$$

(18.57) (63.19)

The t- statistics indicates that percapita GE is a statistically significant variable with an estimated elasticity of $E = 0.85847 > 0$. This value means an increase of 1% unit in GE generates a 0.85847 % unit increase the non-oil gross GDP per capita. The results in table 8.9 show that the GE per capita explains 99% of the variations in Non-Oil GDP/P, leaving only 1% to be explaining by the stochastic disturbance term e (Table 8.9).

Table 8.9: Regression Results for Gupta Version of Keynesian Relation

Versions	D-Variable	Constant	In-Variable	Coefficient	R ²
Gupta	L(GDP/P)	2.19671	L (GE/P)	0.85847	0.9901

In overall, the OLS regression analysis produced some encouraging result indicating the positive impact government expenditures have on economic growth or GDP variables. However, in terms of econometric analysis, the results may suffer from spurious regression; and therefore the time-series features have to be investigated to overcome this in establishing robust results.

8.5.2. Unit Root Test

The theoretical explanation of Unit Root and Cointegration is explained in a previous chapter and also above. This section provides the estimated results for Saudi Arabian data for the period of 1968-2010.

Since all variables under examination are time-series variables; the times series properties of the series has to be investigated to avoid the problem of spurious regression. For this, each series are tested for stationary through apply ADF unit root tests.

Table (8.10) presents the unit root test estimation through ADF tests In the case of the levels of the series, the null-hypothesis of non-stationary cannot be rejected for any of the series. Thus, it is concluded that the levels of all series are non-stationary, but it is rejected with first differences, which suggests that these variables are integrated at the first order or I (1).

Table 8.10: Augmented Dickey-Fuller for Stationary Unit Root Tests for Real GDP and Non-Oil GDP

Variables	ADF(0)	ADF(1)
L(GDP)	-3.44	-2.746
L(GE)	-3.09	-2.757
L(GE/P)	-3.37	-2.970
L(GDP/P)	-3.44	-2.535
L(Non-Oil GDP)	-3.41	-3.291
L(Non-Oil GDP/P)	-3.39	-3.894
5% C-Value	-3.493	-1.687

In the Table (8.10), the results indicate that each of the series is non-stationary when the variables are defined in levels. Considering 5% level of significance, the results, thus, suggest that all the variables are integrated of order one in the unit root test. The results of each variable used in all the three versions of Keynesian Relations in the case of Saudi Arabia for the period of 1968-2010 indicate that the series are non-stationary in level but stationary after the first difference.

Based on these test it can be concluded that all variables tested (LGDP, LGE, LGE/P, LGDP/P, LNON OIL GDP, LNON OIL GDP /P) are contained a unit root at the significance level of 5% for ADF Unit Root in the first difference. These results are consistent with the standard theory, which assumes that most macroeconomic variables are not static level, but become stationary in the first difference (Enders, 1995).

8.5.3. Cointegration Analysis

After making sure that the series are stationary at the first difference, in the next step, Cointegration test applied to examine the long-run relationship between the variables by using OLS test, . Since applying ADF unit root tests it is established that each of the variables used in all three versions of Keynesian Relation are I(1) (see table 8.10), the long-run relationship between the variables can now be tested.

Table 8.11: Contegration OLS Regression Results for Real GDP

Versions	Dependent Variables	Coefficient	T-Stat	Probability	R ²	DW
Peacock & Wiseman	LGDP	0.874	17.89	0.026	0.912	0.890
Goffman	L(GDP/P)	0.539	10.07	0.018	0.702	0.733
Gupta	L(GE/P)	0.793	12.01	0.005	0.795	0.804

Table 8.12: CoinetgrationOLS Regression Results for Real Non Oil-GDP

Versions	Dependent Variables	Coefficient	T-Stat	Probability	R ²	DW
Peacock & Wiseman	LGDP	0.923	72.14	0.018	0.961	0.919
Goffman	L(GDP/P)	0.621	25.37	0.051	0.940	0.903
Gupta	L(GE/P)	0.897	52.71	0.024	0.975	0.881

Table (8.11) and (8.12) presents the estimation for OLS method for the period of 1968 to 2010 in examining the long run relationship between the Government

Expenditure (GE) and economic growth as measured by Real GDP and Non-Oil Sector in the Saudi economy. The results show that there is a long run relationship between the Government Expenditure (GE) and economic growth in terms of non-oil GDP.

The next step is to test co-integration by using Johansen Co-integrating test of the models with real GDP and real-non-oil GDP.

The existence of a cointegration vector is pointed out by a trace test since t-test value exceeds the critical value of 5% level of significance. This means the cointegration tests are statistically significant at a level of 5% for determining the long-run relationship between LGDP and LGE. Otherwise, there is a long run equilibrium relationship between Real GDP and Government Expenditure.

In the case of all the related versions of Wagner's Law (Peacock and Wiseman, Goffman, and Gupta) with real GDP, it was found that the trace tests indicate a 5% level of significance. At the Trace Statistic value in Table (8.13), we the null hypothesis of co-integration in all versions of Keynesian relations with respect to real GDP can be rejected, because the Trace Statistic values are greater than the critical value of 5%. Thus, co-integrated relationships exist for three versions of Wagner's Law (Peacock and Wiseman, Goffman, and Gupta) with respect to real GDP in the case of Saudi Arabia, an even stronger result indicating that the real total government expenditure and real GDP are subject to an equilibrium relationship in the long-run. In the other words, the versions of Peacock and Wiseman, Goffman and Gupta show that co-integration relationships is found and the test supported the existence of one cointegration in the case of real GDP, which implies that there is a long-run relationship between government expenditures and real GDP.

Table 8.13: Johansen Cointegration Test Results with Real GDP

Versions	Hypothesized No. of CE(s)	Eigen value	Trace Statistic (Long Run)	Critical Value 5%	Prob
Peacock & Wiseman	None	0.29806	22.5771	15.41	0.0000
	At most 1	0.17821	8.4206	3.76	0.0000
Goffman	None	0.29090	21.8521	15.41	0.0000
	At most 1	0.08098	8.3778	3.76	0.0000
Gupta	None	0.28622	21.7785	15.41	0.0000
	At most 1	0.18721	8.2911	3.76	0.0000

In the case of real non-oil GDP, the Table (8.14) shows that there is a long run equilibrium relationship between real non oil GDP and government expenditure, or GE, as found in Peacock and Wiseman, Goffman, and Gupta versions of Keynesian relations at 5% levels. In other words, the null hypothesis of cointegration in all versions of Keynesian relations with respect to real non-oil GDP, as the Trace Statistic values are greater than the critical value of 5%.

Table 8.14: Johansen Cointegration Test Results with Real Non-Oil GDP

Versions	Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Value 5%	Prob
Peacock & Wiseman	None	0.26793	21.0726	15.41	0.0000
	At most 1	0.19341	8.5974	3.76	0.0000
Goffman	None	0.33040	17.2386	15.41	0.0000
	At most 1	0.03049	3.8238	3.76	0.0000
Gupta	None	0.29277	25.0288	15.41	0.0000
	At most 1	0.24370	11.1726	3.76	0.0000

8.5.4. Causality Test

After making sure of the time series' model to study the variables that they are not stationary in the level and stationary in the difference, and then check it all integrated joint, clearly that there is a long-term equilibrium relationship. The existing relationship, as discussed previously, is modelled through ECM and ECM in this study is applied for Keynesian Relation in Saudi Arabia through Granger-causality test. The following is hence the findings from Granger Causality Test.

8.5.4.1. Granger Causality Test for Keynesian Relation with Real GDP

In this section, Granger Causality results in the case of three form of Keynesian Relation are presented with real GDP.

(i) Granger Causality in Peacock and Wiseman Version of Keynesian Relation

The probability values from Granger Causality Test are depicted in Table (8.15). The reported F-statistics are a standard test for the joint hypothesis that economic growth or LGDP does not Granger Cause government expenditures or LGE. The probability for accepting the null-hypothesis is only 0.30% while the probability of rejecting it is 99.7%. This implies that economic growth or LGDP causes government expenditures or LGE around 99.7% of the time in Peacock and Wiseman's Version of Keynesian relation.

The causality from LGE to LGDP is also searched for, where the probability for accepting the null-hypothesis is only 15.9%, while 84.1% reject the hypothesis, which means LGE causes LGDP about 84.1% of the time.

Table 8.15: Granger Causality test for Peacock and Wiseman Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP does not Granger Cause LGE	3.6836	0.003
LGE does not Granger Cause LGDP	16.6836	0.159

(ii) Granger Causality in Goffman Version of Keynesian Relation

Table (8.16) presents the result of the causality test based on probability values from the Granger Causality Test. The probability for accepting the null-hypothesis, LGE does not Granger Cause LGDP/P is 34.7% and rejecting it is 65.3%. This means that LGDP/P causes LGE around 65.3% of the time in the Goffman's version of Keynesian relation. In the other direction, the probability for accepting the null-hypothesis of LGE does not Granger Cause LGDP/P is only 0.70% and the probability of rejecting is 99.7%, which means LGE cause LGDP/P around 99.993%. The result of causality test, thus, indicates the existence of strong feedback causality between LGE and LGDP/P in the long run as shown in Table (8.16).

Table 8.16: Granger Causality test for Goffman Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP/PC does not Granger Cause LGE	2.1172	0.347
LGE does not Granger Cause LGDP/PC	9.9422	0.007

(iii) Granger Causality in Gupta Version of Keynesian Relation

The result of causality test based on probability values from Granger Causality Test for the Gupta version of Keynesian relation is presented in Table (8.17). The null-hypothesis that LGDP/P does not Granger Cause LGE/P is accepted with a probability of 11.6% and is rejected by 88.4%, which indicates that LGDP/P causes LGE/P around 88.4% of the time in Gupta's version of Keynesian relation. In the opposite direction, the probability for accepting the null-hypothesis of LGE/P does not Granger Cause LGDP/P is 0.10% and is rejected by 99.9%, which implies that LGE/P causes LGDP/P around 99.9% of the time.

Table 8.17: Granger Causality test for Gupta Version with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGDP/P does not Granger Cause LGE/P	4.3099	0.116
LGE/P does not Granger Cause LGDP/P	15.331	0.001

8.5.4.2. Granger Causality Test for Keynesian Relation with Real Non-Oil GDP**(i) Granger Causality in Peacock and Wiseman Version of Keynesian Relation**

From the findings for Granger Causality Test for the Peacock and Wiseman version of Keynesian relation with real non-oil GDP is presented in Table (8.18). The reported F-statistics are a standard test for the joint hypothesis that L non-oil GDP does not Granger Cause LGE. In the case of Saudi Arabia, the probability for accepting the null-hypothesis is only 52.6% while rejecting is 47.4%. It means that L non-oil GDP causes LGE around 47.4% of the time in Peacock and Wiseman's version of Keynesian relation. In Table (8.18), the feedback of causality from LGE to L non-oil GDP is also presented where the probability for accepting the null-hypothesis is only 0.20% and rejecting it is 99.8% reject the hypothesis. This means that LGE causes L non-oil GDP about 99.8% of the time.

Table 8.18: Granger Causality test for Peacock and Wiseman Version-Non Oil GDP

Null Hypothesis	F-Statistic	Prob.
L Non-Oil GDP does not Granger Cause LGE	1.2849	0.526
LGE does not Granger Cause L Non-Oil GDP	16.198	0.002

(ii) Granger Causality in Goffman Version of Keynesian Relation

By looking at the result of the causality test based on probability values from the Granger Causality Test presented in Table (8.19), the probability for accepting the null-hypothesis that L Non- Oil GDP/P does not Granger Cause LGE is 27.7% with the 72.3% probability of rejecting it. This result indicates that L Non- Oil GDP/P causes LGE around 72.3% of the time in Goffman's version. In the opposite direction, the probability for accepting the null-hypothesis that LGE does not Granger Cause L Non-Oil GDP/P is only 0.10% and it is rejected by 99.9% and hence it can be concluded that LGE causes L Non- Oil GDP/P around 99.9%. The result of causality test indicates the existence of strong feedback causality between LGE and L Non- Oil GDP/P in the long run as shown in Table (8.19).

Table 8.19: Granger Causality test for Goffman Version-Non Oil GDP

Null Hypothesis	F-Statistic	Prob.
L Non- Oil GDP/P does not Granger Cause LGE	2.5677	0.277
LGE does not Granger Cause L Non- Oil GDP/P	14.514	0.001

(iii) Granger Causality in Gupta Version of Keynesian Relation

The result of causality test based on probability values from the Granger Causality Test presented in Table (8.20). As can be seen, the null-hypothesis that L Non-Oil GDP/P does not Granger Cause LGE/P is only 51.4% implying that it is rejected by 48.6%. This means that L Non- Oil GDP/P causes LGE/P by around 48.6% of the time in Gupta's Version, which consistent with Keynesian relation suggestion. In the oppositional direction, the probability for accepting the null-hypothesis of LGE/P does not Granger Cause L Non- Oil GDP/P is 0.60% indicating that LGE/P causes L Non-Oil GDP/P around 99.4% of the time.

Table 8.20: Granger Causality test for Gupta Version-Non Oil GDP

Null Hypothesis	F-Statistic	Prob.
L Non- Oil GDP/P does not Granger Cause LGE/P	1.3316	0.514
LGE/P does not Granger Cause L Non- Oil GDP/P	16.711	0.006

8.5.5. Error Correction Model (ECM) in Keynesian Relation

In this section, ECM is extended and analysis is presented in the following sections with real GDP and non-oil real GDP.

(i) ECM with Real GDP

The results in Table (8.21) indicate that there is long-run unidirectional causality that runs from GDP to GE in Peacock and Wiseman version; from GDP/P to GE in Goffman version; from GDP/P to GE/P in Gupta version of Keynesian relation. This is due to the fact that the variables GE and GE/P are statistically significant at the 5% level, and the variables GDP and GDP/P are statistically insignificant at the 5% level.

Thus, three versions of Keynesian Relations are found to hold for GDP in the case of Saudi Arabia.

Table 8.21: Causality with ECM test with Real GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.002848	-2.61
	L(GDP)	-1.10603	-2.56
Goffman	L(GE)	-0.03125	-3.06
	L(GDP/P)	-0.0978	-2.44
Gupta	L(GE/P)	-0.0282	-2.80
	L(GDP/P)	-0.1069	-2.54

(ii) ECM with Real Non-Oil GDP

In the Table (8.22), the results indicate that there is long-run unidirectional causality exists which runs from non-Oil-GDP to GE as in Peacock and Wiseman version; from non-oil-GDP/P to GE as in Goffman version; from non-oil-GDP/P to GE/P as in Gupta version. This conclusion is due to the fact that the variables GE and GE/P are statistically significant at the 5% level, and the variables non-oil-GDP and non-oil-GDP/P are statistically insignificant at 5% level. Thus, it can be concluded that three versions of Keynesian Relations are found to hold for non-oil-GDP in the case of Saudi Arabia.

Table 8.22: Causality with ECM test with Real Non-Oil GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	0.3915 4	3.08
	L(Non-Oil GDP)	0.0199 5	2.32
Goffman	L(GE)	-0.1754	-3.19
	L(Non-Oil GDP/P)	0.1247 6	3.68
Gupta	L(GE/P)	-0.1448	-2.69
	L(Non-Oil GDP/P)	-0.1185	-3.56

8.6. CONCLUSION

In this chapter, the relationship between government expenditure and economic growth is explored through three versions of Keynesian Relations for Saudi Arabia, using time series annual data for the period 1968 to 2010.

In the analysis, three distinct time series techniques are applied: Initially, the regressions analysis utilised for three versions of Keynesian Relations using Ordinary Least Square (OLS) with real GDP and non-oil GDP. In the next step, the Unit Root tests through Augmented Dickey-Fuller test for stationary is applied with real GDP and non-oil GDP. In the following step, cointegrating test for real GDP and non-oil GDP. Finally, causality tests by using Granger Causality tests are conducted together with ECM.

In overall, the findings in this study suggest that there is a cointegrating relationship between the share of government expenditure in national output and per capita income. The equilibrium relationship indicates that the major determinant of government expenditure in Saudi Arabia, in the long run, is national income. In the case of Real GDP and Non-oil GDP, the versions of Peacock & Wiseman, Goffman and Gupta show that co-integration relationships is found and the test supported the existence of one cointegration.

Finally, Granger's causality tests were used to confirm the causality direction between the variables by using the ECM. Since there exists an ECM to describe the short run adjustment to equilibrium, three versions of the Keynesian Relations are found to hold for both (GDP) and (Non-Oil-GDP) in the case of Saudi Arabia.

The findings in this study verify the importance of Keynesian relation for a late developing country such as Saudi Arabia, where the private capital for economic development until recently was limited. The fiscal policy in the form of government expenditures has been the engine of economic growth and development in Saudi Arabia. The government revenues raised from oil wealth in Saudi Arabia have been the main source of economic and social development of the country, which generated employment and expansion of the economy as predicated by Keynes.

The findings of this research, hence, verified the validity of the Keynesian Relation in the case of Saudi Arabia, and also indicate the importance of government expenditure for economic development in the cases where the private capital is in short supply as was in Saudi Arabia. This does not imply that government's role for economic

growth and development is applauded without any questioning, as the efficiency and effectiveness of using government expenditure is a matter of another debate.

CHAPTER 9

LOCATING DISPLACEMENT EFFECT IN THE GOVERNMENT EXPENDITURES IN SAUDI ARABIA

9.1. INTRODUCTION

This chapter aims to test Peacock and Wiseman's (1961) 'displacement effect hypothesis', which originally attempted to explain the proportional increase in time government expenditures overtime in the United Kingdom through time by making reference to unexpected social and political events. As explained in detail in Chapter 3, they found that government expenditure in the United Kingdom did not follow a smooth trend, but instead deviated from the observed trends by jumping up at separate times to respond to certain socio-political and economic events. This provided a rationale for shift in the level of government expenditures through displacing the previous trend.

The Peacock and Wiseman's (1961) 'displacement effect hypothesis' relates to Wagner's law by developing a different approach as to why government expenditures increase. They contend that under normal conditions of peace and economic stability, changes in public expenditure are rather limited unless some major crisis occurs, which necessitates an increase in government intervention. In other words, Peacock and Wiseman (1961) argue that during social and political upheavals, government expenditures move beyond the secular trend it follows by responding to the upheavals with increased government expenditures as required. However, they argue that the expansion in the government expenditure will not just be temporary. In other words, after such upheaval and crises over, the government expenditures will not go back to the pre-crisis level. Peacock and Wiseman (1961) explain this by referring to the tolerable level of taxation imposed on the taxpayers, as taxpayers will be more tolerable for tax increases during social and political upheavals, which finances increased government expenditures during such periods. However, they further argue that government expenditure will not go back to the previous level after such upheavals as government exploit the tolerable taxation level of the taxpayers and keep the government expenditures at the new level. This, thus, implies that the new level of government expenditures displaces the previous level. Consequently, the size of the public sector will remain able at a higher level until the next shock.

This chapter, hence, aims to test the validity of the ‘displacement effect hypothesis’ in the case of Kingdom of Saudi Arabia, which has recently experienced two important political events: Gulf War I and II. In addition, the impact of oil booms and busts should also be considered as sources of shift from the trend in the development of public expenditures, which may also result in displacement for certain period of time if not in the long-run. All these can be observed in Figure 9.1, which shows the trends in the share of government expenditures in GDP. As can be seen the shift in 1970s, and then in 1980s and later the trend between 1990 and 1994 can be considered as deviation of the trend due to mainly political reasons, which can be explained by the ‘displacement effect’, which is the subject matter of this chapter.

Figure 9.1: Share of Government Expenditure in GDP

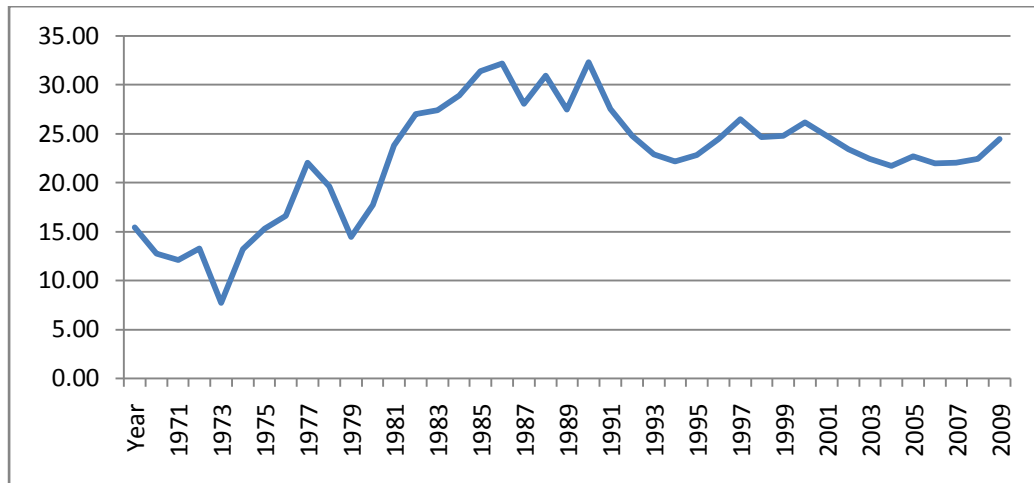
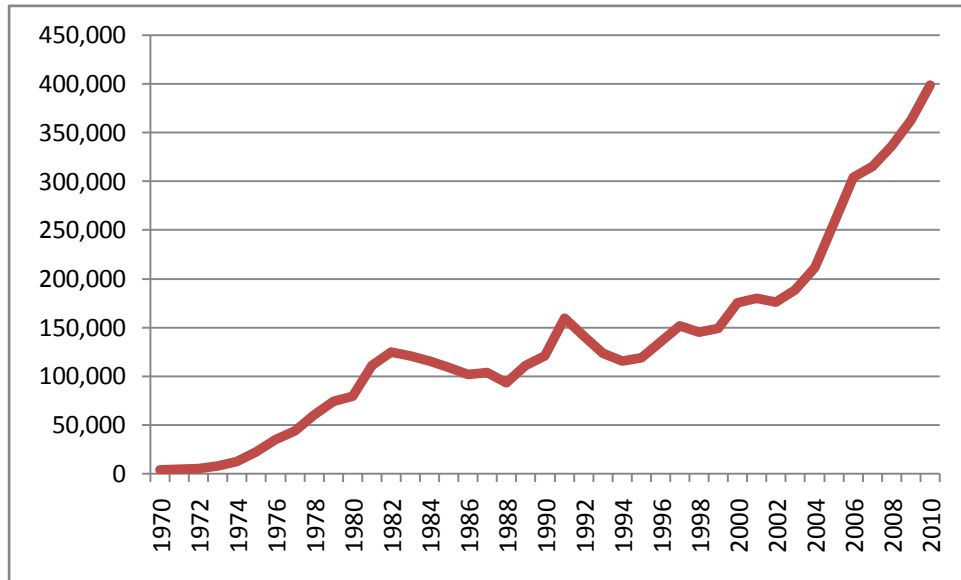


Figure 9.2 also depicts the trends in the absolute level of government expenditures with the objective of locating the deviations from the trends. With the increase in oil revenues after the first oil shock in early 1970s, an increasing trend continues over the years. The jump in the trend in 1980 indicates even higher percentage increase in the government expenditures and therefore shifts the trends upward. The trend reaches its peak in around 1983 and returns to the original trend in 1988. Thus, the shift between 1980 and 1988 could perhaps be explained by displacement effect. Then another deviation from the trend can be seen in 1991 due to the increased defence expenditures mainly because of the First Gulf War. This sudden jump goes back to the original trend in 1995, which again indicates observation based evidence for displacement hypothesis. Relatively smaller deviations from the trends are also observed in 1997 and 2000, which is followed by continuous trend since then.

Figure 9.2: Trends in the Absolute Level of Government Expenditures in Saudi Arabia



This study, therefore, considers that Peacock and Wiseman's 'displacement hypothesis' can explain deviations from the trends, and in particular the recent wars and other relevant events can be considered potential reasons of deviation in the Saudi government expenditures. The data used in this study is the time series annual data for the 1968 to 1989 period being the pre- Gulf War II, and 1990 to 2010 period being the post-Gulf War II, which have been used to analyse the developments in government expenditure (GE) in relation to economic growth by making particular reference to 'displacement hypothesis'.

The rest of the chapter is organised as follows: section one, presents some empirical results of relevant theoretical and empirical literature on the relationship between government expenditure and economic growth in relation to 'displacement effect hypothesis.' Following section, presents the Peacock and Wiseman version, and the formal explanation of the 'displacement effect hypotheses'. Section three, investigates the data and empirical results and analysis by using displacement effect hypotheses'. Section four, presents the results of analysis by using the time series techniques, such as the Ordinary Least Square (OLS), Augmented Dickey-Fuller for stationary Unit Root Tests, Cointegration Test, Causality Granger Test, and Error Correction Model (ECM), that for real GDP and Non-Oil GDP. While section five, concludes the chapter and presents the finding.

9.2. THE DISPLACEMENT EFFECT HYPOTHESIS

Peacock and Wiseman's (1961) observation on the developments of public expenditures lead to the 'displacement effect hypotheses in case of the UK. As explained in Chapter 3 and mentioned above, the hypothesis states that due to some social and political events and crises government expenditures, as expected, would increase in response to the increased public expenditures during such times. However, according to the hypothesis, after such incidences, the government expenditures would stay in the new level rather than going back to the pre-crises level and trend, implying a shift and displacement.

The hypothesis, however, indicates two important dimensions as discussed in the literature; the structural break from the trend but also the ratchet impact indicating the initial jump in the government expenditures due to such events. These are explained in the following sections.

9.2.1. Structural Break

As explained Chapter 3, wars and other social and political upheavals are capable of displacing this notion of tolerable tax rates and hence displacing the level of government expenditures. After such events, government expenditure may fall again, but not to their previous levels. Therefore, public expenditure grows in a discontinuous and stepwise fashion, the steps occurring at times of major social upheavals (Demirbas, 1999). In other words, Peacock and Wiseman investigated that both citizens and government hold divergent views about the desirable size of public expenditures and the possible level of government taxation. This divergence can be adjusted by social disturbances that destroy established conceptions and produce a displacement effect. People will accept, in a period of crisis, tax levels and methods of raising revenue that in quieter times would have been intolerable, and this acceptance remains when the disturbance itself has disappeared. Thus, the hypothesis indicates that there is the structural change aspect in government expenditures in terms of the trend.

In explaining the 'displacement effect hypothesis', Henrekson (1990: 246) states that "Peacock and Wiseman (1961), adopt a clearly inductive approach to explaining the growth of government expenditure. When Peacock and Wiseman observed that expenditures over time appeared to outline a series of plateaus separated by peaks, and that these peaks coincided with periods of war and preparation for war they were led to expound the 'displacement effect' hypothesis". Such an explanation refers to the

structural break nature of the hypothesis. Diamond (1977), therefore, presented the displacement effect as a theory of structural break. He used the Chow test (1960), comparing two periods separated by a social upheaval, and he found that, if this shows significant structural change and there has been displacement.

9.2.2. A Ratchet Effect

As mentioned discussed in Chapter 3, the ‘ratchet effect’ refers to the restrained ability of a processes to be reversed once a specific thing has happened. The term is used within the ‘displacement effect hypothesis’ to describe the seemingly irreversible expansion of government in times of crisis in his book. In other words, as explained due to the expansionary government expenditures during crises periods, governments then have difficulty in reducing government expenditures back to the original level after the initial temporary needs due to war, natural or economic crisis. The government’s exploitation of taxpayers’ tolerance plays an important role in this process. Thus, the main argument of the ratchet effect is that if there is a crisis and government expenditures grows as a result, then the public expenditure might decline but not to the previous level as there would be resistance against such a move.

According to Bird (1972), within the displacement effect, this has called ‘ratchet effect’. This is due to the fact that, for Bird (1972) crises are likely to have short-term implications for government expenditure ratio rather than leading to a permanent upward displacement for. Thus, Bird (1972) acknowledges the ratchet effect but rejects the displacement effect. In another study, Peacock and Wiseman (1979) argued that in the extreme, the ratchet effect interpretation of the displacement effect leads to the denial of its very existence.

9.2.3. Empirical Testing of Displacement Effect: Previous Studies

Gupta (1967) was the first to attempt to subject the displacement effect to empirical testing in the case of European countries. He found significant displacement in all cases except for Sweden after the Second World War, and also found significant displacement caused by the Great Depression in the case of the USA and Canada.

Legrenzi (2004) argued that the displacement effect for Italy lay within a multivariate revenue-expenditure model of government growth. His result for long-run analysis shows the effect of GDP on the government’s growth. Otherwise, he found that the short-run analysis shows some evidence for the displacement effect in terms of a

lower resistance against tax financing of government expenditure during the Second World War.

Another study by Henry and Olekalns (2000) investigated the Peacock and Wiseman's 'displacement effect' to explain the increases in the ratio of government expenditure to GDP in the UK. They used a data set extending back to 1836, and found instances where displacement may have occurred.

9.3. MODELLING DISPLACEMENT EFFECT IN ECONOMETRIC METHODOLOGY

In an attempt to search for the 'displacement effect' in the case of Saudi Arabia, Peacock-Wiseman version of Wagner's Law is utilised, which is presented in Table (9.1) in real GDP.

Table 9.1: The Original Version of Peacock-Wiseman with Real GDP

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(GDP)$	Peacock-Wiseman	1967

In addition, the non-oil GDP version of the Peacock and Wiseman's Wagner Law exposition is depicted in Table (9.2).

Table 9.2: The Version of Peacock-Wiseman with Real Non-Oil Sector of GDP

No	Function	Version	Year
1	$L(GE) = \alpha + \beta L(\text{Non-Oil GDP})$	Peacock-Wiseman	1967

In analysing the identified model, the Ordinary Least Square (OLS) test is employed to determine the parameters in the equations. In terms of diagnosis tests, the Durbin-Watson (DW) statistic indicates the absence of serial correlation among the residuals; R^2 reflects the regression equation's ability to determine the dependent variable's performance in terms of explaining the observed variance in the dependent variable. In addition, the coefficients of the logarithm model are considered as elasticities. However, it should not be noted that the logarithm transformation is applicable only when all the observations in the data set are positive.

As for the formal explanation of the model, according to Gujarati (1995), the normal regression model by taking logs of both sides of the equation:

The normal equation of Peacock and Wiseman version of Wagner's Law is:

$$GE = f(GDP) \quad f' > 0 \text{ \& } f'' \geq 0 \quad (9.1)$$

where: GE = Total Government Expenditure level in real terms.

GDP= Gross Domestic Product in real terms.

$$GE = \alpha + \beta GDP + e \quad (9.2)$$

The equation by using logarithm model:

$$L(GE) = \alpha + \beta L(GDP) + e \quad (9.3)$$

$$E(\text{Peacock \& Wiseman}) = \frac{d(GE)}{d(GDP)} / \frac{GE}{GDP} \quad (9.4)$$

Where: E denotes elasticity.

In order to capture the impact of political events such as Gulf War 1 and Gulf War 2, structural break test is employed.

For this, the data is split into two groups, then the Chow test is utilised, which is like an F- test:

$$F = \frac{RSS_c - (RSS_1 + RSS_2)/k}{(RSS_1 + RSS_2)/(n - 2k)} \quad (9.5)$$

The hypotheses for the Chow Test are:

$$H_0: \beta_1 = 0; (\text{There is no structural break})$$

$$H_1: \beta_1 \neq 0; (\text{There is a structural break})$$

It should be noted that the impact of various social, political and economic upheavals and crises can also be captured through dummy variables. Therefore, in this study, initially dummy variables are used to test the significance of 'displacement effect' in the case of Saudi Arabia. The following social, political and economic upheavals and events are considered by this study as important events causing shift in Saudi government expenditures due to their enormity:.

D1973: Dummy Variables for year 1973 for the first oil shock resulting in large revenues of the Saudi government;

D1976: Dummy Variables for year 1976 for the second oil shock which resulted in even larger revenues for the government;

D1983: Dummy Variables for year 1983 for the global recession due to the high oil prices which resulted in shrinking revenues for Saudi Arabia;

D1991: Dummy Variables for year 1991 indicating the beginning of the Gulf War 1;

D1997: Dummy Variables for year 1997 for the financial crisis affecting certain parts of the world;

D2001: Dummy Variables for year 2001 for the beginning of the Gulf War 2;

D2006: Dummy Variables for year 2006 for the collapse of the Saudi stock market.

The Peacock and Wiseman version of the Wagner Law is, then, presented in its modified version as follows:

$$\begin{aligned} L(GE) = & \alpha + \beta_1 L(GDP) + \beta_2 D(1973) + \beta_3 D(1976) \\ & + \beta_4 D(1983) + \beta_5 D(1991) + \beta_6 D(1997) + \beta_3 D(2001) \\ & + \beta_3 D(2006) + e_t \end{aligned} \quad (9.6)$$

9.4. FINDINGS FOR DISPLACEMENT EFFECT IN THE CASE OF SAUDI ARABIA

After identifying the model and its particularities, Peacock and Wiseman version of the Wagner Law is utilised to examine the validity of ‘displacement effect’ in the case of Saudi Arabia from 1968-2010. In doing so results first presented with real-GDP and later with non-oil GDP.

9.4.1. Peacock-Wiseman Hypothesis with Real-GDP and Economic and Political Dummy Variables, 1968-2010

In testing the ‘displacement effect’, the model is expanded, as mentioned before, with the addition of political and economic dummy variables as defined above:

$$\begin{aligned} L(GE) = & \alpha + \beta_1 L(GDP) + \beta_2 D(1973) + \beta_3 D(1976) \\ & + \beta_4 D(1983) + \beta_5 D(1991) + \beta_6 D(1997) + \beta_3 D(2001) \\ & + \beta_3 D(2006) + e_t \end{aligned} \quad (9.7)$$

The results from OLS test are presented in Table 9.3.

Table 9.3: Displacement Effect (Real GDP): 1968-2010

1968 – 2010			
Variables	Coefficient	T-Stat	Probability
C	5.006246	5.509902	0.0000
LNGDP	0.321715	3.603543	0.0010
D1973	0.778761	3.773290	0.0006
D1976	1.280299	6.966756	0.0000
D1983	0.407364	3.659938	0.0009
D1991	0.080591	0.673151	0.5055
D1997	0.111410	0.797913	0.4306
D2001	0.157782	1.072245	0.2914
D2006	0.470858	3.261902	0.0026
R-squared	0.979187	Durbin-Watson stat	1.759770
Adjusted R-squared	0.974142	F-statistic	194.0718

The results, as depicted in Table 9.3, show that all variables are significant except for the dummy variables for Gulf War 1 in 1991, for 1997 financial crisis, and for 2001 Gulf War 2 is not.

The results indicate that the coefficient value of the GDP as being the main independent variable gives the elasticity of government expenditure growth in relation to realGDP: $E = 0.321715 > 0$, which means that a 1% unit increase in GDP generates a 0.321715% unit increase GE. R^2 being 97.92% indicates the strength of the model, leaving only 2.08% to be explaining by the stochastic disturbance term, e.

These findings are consistent with Wagner's Law of increasing state activities, which states the income elasticity of demand for public goods is greater than unity. In addition, the findings in Table 9.3 indicate that the dummy variables, D1973, D1976, D1983 and D2006 are statistically significant for the period 1968-2010 for Saudi Arabia. Thus, it can be concluded that the events indicated by the significant dummy variables have caused a change in the government expenditures in Saudi Arabia.

9.4.2. Testing Displacement Effect through Chow Test

In order to test the existence of 'displacement effect' in the case of Saudi Arabia, as mentioned, structural test can be used. For this, the data are split into two: 1968-1989

and 1990-2010. After establishing the results for the period in question with only the relevant dummy variables, the Chow test is applied (Chow, 1960).

9.4.2.1. Testing for Displacement Effect for 1968 to 1989 with Real-GDP

The estimation for Peacock and Wiseman version of Wagner's Law in relation to the 'displacement effect' is conducted initially for only 1968-1989 period, and the results are depicted in table 9.4. It should be noted that only the relevant variables are included in the model, namely D1973, D1976 and D1983, as the data covers only until 1989. The formal model is expressed as in equation 9.8.

$$\begin{aligned} L(GE) = & \alpha + \beta_1 L(GDP) + \beta_2 D(1973) + \beta_3 D(1976) \\ & + \beta_4 D(1983) + e_t \end{aligned} \quad (9.8)$$

Where:

D1973: Dummy Variables for year (1973)

D1976: Dummy Variables for year (1976)

D1983: Dummy Variables for year (1983)

Table 9.4: Displacement Effect with Real GDP, 1968-1989

1968 – 1989			
Variables	Coefficient	T-Stat	Probability
C	0.036244	0.035622	0.9720
LNGDP	0.812822	8.102681	0.0000
D1973	0.042101	0.225312	0.8244
D1976	0.683955	4.258447	0.0005
D1983	0.418495	5.155309	0.0001
R-squared	0.990514	Durbin-Watson stat	2.773533
Adjusted R-squared	0.988281	F-statistic	443.7560

In confirming the results in Table (9.4), the findings in Table (9.4) show that except for the dummy variable for the 1973 oil shock all the variables are significant. The elasticity of the government expenditures in relations to GDP indicates that an increase of 1% unit in GDP generates a 0.812822% unit increase GE. The overall

explanatory power of the model as explained by the R^2 shows that the model is capable of explaining 99% of the variation in the dependent variable.

This finding is consistent with Wagner's Law of increasing state activities, which states the income elasticity of demand for public goods is greater than unity. In addition, having, D1976, and D1983 dummy variables indicates an important result in terms of displacement effect, as oil shock in 1976 generated large income for public expenditures to expand, and 1983 global recession created fiscal crisis in Saudi Arabia as well. Therefore, these two dummy variables help to verify displacement hypothesis in terms of divergence of government expenditures from its trend due to economic expansion and crisis. However, the insignificance of dummy variable for 1973 oil shock is rather unexpected, which can be explained through initial inexperience of the government in directing the new economic wealth to economic development through expanding government expenditures. In other words, the social capital in terms of economic development perhaps was much lower; and therefore the use of resources for economic development was not prioritised.

9.4.2.2. Testing for Displacement Effect for 1990 to 2010 with Real-GDP

As part of the structural test, the second part of the data for 1990-2010 is also examined for the presence of displacement effect, as in equation 9.9. As before, only the relevant dummy variables are included in the equation, and the results are presented in Table 9.5.

$$\begin{aligned} L(GE) = & \alpha + \beta_1 L(GDP) + \beta_2 D(1991) + \beta_3 D(1997) \\ & + \beta_4 D(2001) + \beta_5 D(2006) \\ & + e_t \end{aligned} \quad (9.9)$$

where:

D1991: Dummy Variables for year (1991)

D1997: Dummy Variables for year (1997)

D2001: Dummy Variables for year (2001)

D2006: Dummy Variables for year (2006)

Table 9.5: Displacement Effect with Real GDP, 1990-2010

1990 – 2010			
Variables	Coefficient	T-Stat	Probability
C	11.73833	13.59206	0.001
LNGDP	0.232955	0.744838	0.634
D1991	0.082179	0.615821	0.521
D1997	0.166333	2.073080	0.056
D2001	0.263462	3.088118	0.006
D2006	0.490176	5.929548	0.005
R-square	0.917577	Durbin-Watson stat	0.001
Adjusted R-squared	0.888140	F-statistic	0.634

As can be seen in Table 9.5, the GDP and D1991 variables are not significant, and the rest of the dummy variables for 1997, 2001 and 2006 are all significant at 5% level of significance. Despite being not significant, the coefficient of the GDP being the elasticity of government expenditure growth indicates that an increase of 1% unit in GDP generates a 0.232955% unit increase Government Expenditure (GE). The R^2 value is very high indicating the high explanatory power of the model.

It should be noted that although GDP variable is not significant, this finding is still consistent with Wagner's Law of increasing state activities, as the income elasticity of demand for public goods is greater than unity. The dummy variables D1997, D2001, and D2006 are all significant indicating the impact of these variables in creating shift in the government expenditures during the period 1968 to 2010. However, it is difficult to explain as to why D1991 indicating the impact of 1991 Gulf War 1 on the Saudi government expenditures is not significant.

9.4.2.3. Structural Break – Chow Test with Real GDP

After establishing the results for the split data (1968-1990 and 1990-2010), the Chow test for structural break is conducted, which is like an F- test following formula (9.10):

$$F = \frac{RSS_c - (RSS_1 + RSS_2)/k}{(RSS_1 + RSS_2)/n - 2k} \quad (9.10)$$

The hypotheses tests are:

$H_0: \beta_i = 0$; (There is no structural break)

$H_1: \beta_1 \neq 0$; (There is a structural break)

Table 9.6: Residual Sum of Squares with Real GDP

Source	RSSc	RSS1	RSS2	Df
Model	66.1080129	39.3294686	2.35229	1
Residual	7.21881508	1.91152187	0.215347	40

$$F = \frac{66.1080129 - (39.3295 + 2.35229/1)}{(39.3295 + 2.35229/42 - 2(1))} = 23.44$$

After establishing the value for Chow-test, it can be concluded that since F-test $(1, 40) = 23.44$ is higher than the critical value from the F-Table $(5\%) = 4.0847$, the null hypothesis that there is no structural break is rejected and instead the alternative hypothesis stating that there is structural break is accepted. This implies that structural break is a reality in the Saudi Arabian government expenditures at least in terms of 1968-1989 and 1990-2010 period. In addition, with the existence of dummy variables and their significance, the validity of ‘displacement effect’ is verified in the case of Saudi Arabia.

9.5. FINDINGS FOR DISPLACEMENT EFFECT IN THE CASE OF SAUDI ARABIA WITH NON-OIL GDP

The same procedure in the previous section repeated in this section with non-oil GDP to eliminate the impact of oil on the growth of government expenditures.

Initially, the equation in equation 9.11 is run for the entire period, 1968-2010, with the seven variables as defined before.

$$\begin{aligned} L(GE) = & \alpha + \beta_1 L(\text{Non Oil GDP}) + \beta_2 D(1973) + \beta_3 D(1976) \\ & + \beta_4 D(1983) + \beta_5 D(1991) + \beta_6 D(1997) + \beta_3 D(2001) \\ & + \beta_3 D(2006) + e_t \end{aligned} \quad (9.11)$$

The results are depicted in Table 9.7:

Table 9.7: Displacement Effect with non-oil real GDP 1968 to 2010

1968 – 2010			
Variables	Coefficient	T-Stat	Probability
C	-1.663560	0.572393	-2.906324
LN Non Oil-GDP	1.040415	0.059883	17.37416
D1973	0.189706	0.084801	2.237078
D1976	0.095467	0.106051	0.900197
D1983	-0.057862	0.049004	-1.180754
D1991	-0.054312	0.045195	-1.201744
D1997	-0.030112	0.052661	-0.571803
D2001	0.061700	0.054692	1.128137
D2006	0.144582	0.057034	2.535015
R-squared	0.997142	Durbin-Watson stat	1.269720
Adjusted R-squared	0.996449	F-statistic	1439.122

As the results, in Table 9.7 depicts, none of the variables including the GDP is not significant, despite the fact that the coefficients values of each of the variables indicate a certain level of impact in addition to the strong coefficient of determination as explained by R^2 .

9.5.1. Testing for Displacement Effect for 1968 to 1989 with Non Oil real GDP

As part of the structural change test, Chow test, as before, the data split into two to capture the impact of potential structural change in the government expenditures in Saudi Arabia.

Table 9.8 shows the results for the period of 1968-1989 with the relevant dummy variables.

Table 9.8: Displacement Effect with non-oil real GDP 1968 to 1989

1968 – 1989			
Variables	Coefficient	T-Stat	Probability
C	-1.797123	-4.369981	0.0004
LN_NON_OIL_GDP	1.054415	24.50498	0.0000
D1973	0.175285	2.918593	0.0096
D1976	0.074266	0.982622	0.3396
D1983	-0.070775	-2.018635	0.0596
R-squared	0.998730	Durbin-Watson stat	2.773533
Adjusted R-squared	0.998431	F-statistic	3342.748

As the results in Table 9.8 demonstrates, except for D1976 all the variables are significant with non-oil GDP having full significance and also high coefficient estimate as compared to other variables.

9.5.2. Testing for Displacement Effect for 1990 to 2010 with Non Oil real-GDP

The same exercise repeated for the second part of the data or 1990-2010 period and the results are depicted in Table 9.9.

Table 9.9: Displacement Effect with non-oil real GDP 1990 to 2010

1990 – 2010			
Variables	Coefficient	T-Stat	Probability
C	1.787005	4.008829	0.445767
LN Non Oil-GDP	0.787996	0.318562	2.473602
D1990	-0.057546	0.124379	-0.462665
D1997	0.017427	0.089406	0.194924
D2001	0.110417	0.092334	1.195845
D2006	0.228385	0.126219	1.809441
R-squared	0.942636	Durbin-Watson stat	1.223875
Adjusted R-squared	0.922149	F-statistic	46.01129

As the results in Table 9.9 indicate, none of the variables show any statistical significance. It can therefore be concluded that oil revenues play an important role in

determining the government expenditures, as when comparing the results with the results in the previous section the role of oil revenues is rather clear.

9.5.3. Structural Break: Chow Test with Non-Oil real GDP

After establishing the results for the split data (1968-1990 and 1990-2010), the Chow test for structural break is conducted, which is like an F- test following formula (9.12):

$$F = \frac{RSS_c - (RSS_1 + RSS_2)/k}{(RSS_1 + RSS_2)/n - 2k} \quad (9.12)$$

The hypotheses tests are:

$$H_0: \beta_1 = 0; \text{ (There is no structural break)}$$

$$H_1: \beta_1 \neq 0; \text{ (There is a structural break)}$$

Table 9.10: Residual Sum of Squares with Non-Oil real GDP

Source	RSSc	RSS1	RSS2	Df
Model	62.3715	32.4621	3.1562	1
Residual	8.04153	1.28351	0.24721	40

$$F = \frac{62.3715 - (32.4621 + 3.1562)/1}{(32.4621 + 3.1562)/42 - 2(1)} = 30.04$$

After establishing the value for Chow-test, it can be concluded that since F-test $(1, 40) = 30.04$ is higher than the critical value from the F-Table (5%) = 4.0847, the null hypothesis that there is no structural break is rejected and instead the alternative hypothesis stating that there is structural break is accepted. This implies that structural break is a reality in the Saudi Arabian government expenditures at least in terms of 1968-1989 and 1990-2010 period. In addition, with the existence of dummy variables and their significance, the validity of ‘displacement effect’ is verified in the case of Saudi Arabia.

9.6. TIME SERIES ANALYSIS IN LOCATING THE DISPLACEMENT EFFECT

After conducting the research with OLS in search for displacement effect in the case of Saudi Arabia, this section aims to further the analysis by using times-series analysis, which includes unit root and cointegration test.

9.6.1. Unit Root Test

The unit root test in this section aims to examine the properties of time series annual data for each of the government expenditures (LGE), gross domestic product (LGDP), during the period 1968-2010 but it is applied to split data 1968-1989 to 1990-2010 with the objective of locating the structural breakdown..

To test the stationary time series model for the study variables, it requires the unit root test (Enders: 1995) for which Augmented Dickey-Fuller test is used as expressed in equation 9.13:

$$\Delta Y_t = a_0 + a_1 t + a_2 Y_{t-1} + \sum_{i=1}^k a_i Y_{t-i} + e_t \quad (9.13)$$

where:

Δ = the first difference of the series.

Y_t = is the series under consideration (GDP, government expenditures, or government revenues),

t = the time trend.

k = the number of lag.

e_t = is stationary random error (white noise residual).

The hypotheses tests are:

H_0 : Unit root exists in Y , it means that : Y is non – stationary

H_1 : Unit root dose not exists in Y , it means that : Y is stationary

If the null hypothesis is rejected, it implies that the variable is non-stationary, and hence there is a unit root process. On the other hand, if the outcome indicates that the series are stationary after the first difference, in other words, the series integrated of order one $I(1)$, then co-integration test can be performed.

In this section the unit root test is performed for Peacock and Wiseman version for real GDP and non-oil GDP firstly for 1968 to 2009, and then for the split periods: 1968 to 1989 and from 1990 to 2009. Table 9.11 presents the calculated t-value from Augmented Dickey-Fuller for stationary unit root tests on each variable.

Table 9.11: Unit Root Test for Stationary for Real GDP

Variables	Augmented Dickey-Fuller for Stationary Unit Root Test Statistics
During (1968-2010)	
L(GDP)	-3.23
L(GE)	-3.88
L(Non-Oil GDP)	-4.12
Critical Values 5% level	-2.937
During (1968-1989)	
L(GDP)	-3.756
L(GE)	-3.877
L(Non-Oil GDP)	-4.330
Critical Values 5% level	-3.00
During (1990-2010)	
L(GDP)	-4.105
L(GE)	-5.521
L(Non-Oil GDP)	-4.147
Critical Values 5% level	-3.600

The results in Table 9.12 indicates that each variable used in Peacock and Wiseman version of Wagner's Law in Saudi Arabia indicate that the series are stationary after the first difference.

Based on these test it can be concluded that all variables tested (LGDP, LGE, LNON OIL GDP) are contained a unit root significant level of 5% for Augmented Dickey-Fuller for stationary unit root tests.

In the next step, cointegration test is applied to examine the long-run relationship between the variables by using OLS test. Applying ADF unit root tests (Table 9.12), thus, it is established that each of the variables used in all Peacock and Wiseman version of Wagner's Law is cointegrated at first order, or $I(1)$, which can be tested for long-run relationship between the variables.

Table 9.12: Contegration Regressions Results for Real GDP

Versions	Dependent Variables	Coefficient	T-Stat	Probability	R ²	DW
Peacock & Wiseman	LGE	1968 – 2010				
		0.467	4.16	0.021	0.651	0.973
		1968 – 1989				
		1.101	14.02	0.006	0.882	0.705
		1990 – 2010				
		0.511	0.62	0.763	0.532	0.921

Table 9.13: Cointegration Regression Results for Real Non Oil-GDP

Versions	Dependent Variables	Coefficient	T-Stat	Probability	R ²	DW
Peacock & Wiseman	LGE	1968 – 2010				
		1.024	17.12	0.004	0.932	1.171
		1968 – 1989				
		0.987	20.44	0.000	0.929	1.913
		1990 – 2010				
		0.663	2.74	0.002	0.961	1.192

The results in Table 9.12 and 9.13 present OLS time series results for the entire 1968-2010 and also the split periods. The results show that there is a long run relationship between the Government Expenditure (GE) and Economic Growth (GDP) for non-oil GDP in Saudi Arabia for the entire period as well as for the split periods as the independent variable is significant. However, in the case of real-GDP version, the next step is to test cointegration by using Johansen cointegrating test.

9.6.2. Cointegration Test

In this section, the cointegration test for Peacock and Wiseman version for real GDP and non-oil GDP for the 1968 to 2010 period in Saudi Arabia is conducted; but also the split periods (1968 to 1989 and 1990 to 2010) are also examined.

As mentioned previously, the concept of integration common that if the level variables of the form are non-stationary any package of first class, if possible, to generate a linear combination of these variables has characterized by a static zero-class integrated I (0). In such a case, the integrated real-time variables of the same rank co-integrated, and thus it can use the level variables in the regression, nor is the decline in this case a false spurious.

The null hypothesis is that the variables under investigation are not co-integrated. The rejection of the null hypothesis requires that the trace value of the co-integration test to be greater than at least one of the different critical values. Therefore, failing to reject the null hypothesis of no cointegration leads us to conclude that there is no relationship in the long-term equilibrium between government spending and national income.

Cointegration test in this study is conducted by using the method developed by Johansen (1988), and Johansen and Juselius (1990). Many studies use the Engle Granger two-step, but there are those who used a Johansen and Juselius (1990), for so many advantages: such as first, it tests for all of the variables and, secondly, all variables are treated as internal variables, so that the choice of the variable is not arbitrary. This procedure is the most reliable test for cointegration.

To determine whether stochastic trends in series have related to each other or not, cointegration in Peacock and Wiseman version of the growth of government is tested. In addition, after determining the order of integration by Augmented Dickey-Fuller for stationary Unit Root Tests, co-integration of the series are tested, and if they are, the cointegrating long-run equilibrium relationship has to be identified.

9.6.2.1. Cointegration Test with Real GDP

In the case of real GDP for the period 1968-2010, Table 9.14 shows that cointegration relationship is found and the test supports the existence of one cointegration equation in the relationship between LGE and LGDP. By looking at the trace statistic value in Table 9.14, it can be concluded that the null hypothesis of no cointegration has to be rejected in the Peacock & Wiseman version of Wagner's Law, as the trace statistic values are greater than the critical value of 5%.

The existence of a co-integration vector is pointed out by a trace test since t-test value exceeds critical value of 5% level of significance. This means the cointegration tests are statistically significant at five per cent level for determining the long-run relationship between LGE and LGDP.

For the period of 1968-2010 the Johansen Cointegration test includes 43 observations with exogenous or dummy variables with series D1973, D1976, D1983, D1991, D1997, D2001, and D2006 in first differences. Peacock and Wiseman version is tested in this section and it is found that the trace test indicates a level of significance at 5%. At the trace statistic value in Table 9.14, we can reject the null hypothesis of

cointegration in Peacock and Wiseman version, because the trace statistic values are greater than the critical value of 5%.

Table 9.14: Johansen Cointegration Test results (Real GDP) 1968 to 2010

Versions	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic (Long Run)	Critical Value 5%	Prob
Peacock & Wiseman	None	0.29806	22.5771	15.41	0.0000
	At most 1	0.18983	8.4206	3.76	0.0000

In terms of split data, in the case of real GDP for the period of 1968 to 1989, Table 9.15 shows that cointegration relationship is found and the test supports the existence of no cointegration equation in the relationship between LGE and LGDP. In the test, 22 observations included with dummy variables series of D1973, D1976, and D1983 in their first differences, and the trace test indicates no co-integrating of 5%.

Table 9.15: Johansen Cointegration Test results (Real GDP) 1968-1989

Versions	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic (Long Run)	Critical Value 5%	Prob.
Peacock & Wiseman	None	0.320153	8.233101	15.41	0.0000
	At most 1	0.046326	0.901238	3.76	0.0000

On the other hand, in the case of real GDP for the period 1990-2010, Table 9.16 shows that cointegration relationship were found and the test support the existence of no cointegration equation in the relationship between LGE and LGDP. In this test, 21 observations included with D1991, D1997, D2001, and D2006 in first differences.

Table 9.16: Johansen Cointegration Test results (Real GDP) from 1990-2010

Versions	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic (Long Run)	Critical Value 5%	Prob.
Peacock & Wiseman	None	0.287262	10.06590	15.41	0.0000
	At most 1	0.151812	3.293070	3.76	0.0000

9.6.2.2. Cointegration Test with Real Non-Oil GDP

In the case of real non-oil GDP for the entire period of 1968 to 2010, includes 43 observations with exogenous or dummy variables with series D1973, D1976, D1983, D1991, D1997, D2001, and D2006 in first differences, Table 9.17 shows that there is a long run equilibrium relationship between non-oil real GDP and government

expenditures as found in Peacock & Wiseman version of Wagner's Law in searching for 'displacement effect' with respect to real non-oil GDP at 5% level of significance. Thus, the null hypothesis of cointegration is rejected in all versions of Wagner's Law with respect to non-oil real GDP, because the trace statistics values are greater than the critical value of 5%. Co-integrated relationships exist for Peacock and Wiseman version of Wagner's Law in searching for 'displacement effect' with respect to real non-oil GDP at 5% level of significance with respect to real non-oil GDP in the case of Saudi Arabia, an even stronger result indicating that the real total government expenditure and real non-oil GDP are subject to an equilibrium relationship in the long-run.

Table 9.17: Johansen Co-integration Test results (Real Non-Oil GDP) 1968-2010

Versions	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	Critical Value 5%	Prob.
Peacock & Wiseman	None	0.26793	21.0726	15.41	0.0000
	At most 1	0.19341	8.5974	3.76	0.0000

For the first part of the split data, 1968 to 1989, includes 22 observations with exogenous or dummy variables with series D1973, D1976, D1983 in first differences, Table 9.18 shows that there is long run equilibrium relationship between non-oil real GDP and government expenditure at 5% significance level. The result indicates that there is one cointegration is rejected in Peacock & Wiseman version with respect to real non-oil GDP Table 9.18, because the trace statistic values are greater than the critical values of 5%.

Table 9.18: Johansen Cointegration Test (Real Non-Oil GDP) 1968-1989

Versions	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	Critical Value 5%	Prob.
Peacock & Wiseman	None	0.598345	18.71788	15.41	0.0000
	At most 1	0.070389	1.386793	3.76	0.0000

On the other hand, in the case of real non-oil GDP for the 1990-2010, includes 21 observations with exogenous or dummy variables with series D1991, D1997, D2001, and D2006 in first differences, the results in Table 9.19 shows that the trace test indicates no cointegration at 5% significance level, as the trace statistic value lesser than the critical value of 5%.

Table 9.19: Johansen Cointegration Test (Real Non-Oil GDP) 1990-2010

Versions	Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Value 5%	Prob
Peacock & Wiseman	None	0.337350	8.642084	15.41	0.0000
	At most 1	0.020385	0.411915	3.76	0.0000

9.6.3. Causality Test

The econometric analysis so far indicates that there is a long-term equilibrium relationship between government expenditures and GDP in the Peacock and Wiseman version of the Wagner's Law in search for 'displacement effect'.

According to, Engle and Granger (1987), the variables that integrate towards a common equilibrium reflects a long-term relationship, and therefore it should be a representation of Error Correction Model (ECM), which provides the opportunity to test and assess the relationship in the short and long term between the variables of the form. To apply the Error Correction Model (ECM) to Peacock & Wiseman version in Saudi Arabia, first Granger-causality has to be explored.

9.6.3.1. Granger Causality Test

In this, the Granger Causality for Peacock and Wiseman version for real GDP and non-oil GDP for the entire period and also for the split periods are tested.

(i) Granger Causality Test with Real GDP

Table 9.20 shows the probability values from the Granger Causality Test for Peacock and Wiseman Version for the period of 1968-2010 with Real GDP. The reported F-statistics are standard test for the joint hypothesis that LGE does not Granger Cause LGDP. In the case of Saudi Arabia, the probability for accepting the null-hypothesis was only 0.36% while 99.64% reject this hypothesis, which means LGE causes LGDP around 99.64% of the time in the Peacock and Wiseman's Version. In Table 9.19, the feedback of causality from LGDP to LGE is presented where the probability for accepting the null-hypothesis is only 23.36% while 76.64% reject the hypothesis, which means LGDP causes LGE about 76.6% times in the case of Saudi Arabia. It can, therefore, be concluded that there is bi-directional causality between government expenditures and GDP in the case of Peacock and Wiseman version of Wagner's Law in search of 'displacement effect'.

Table 9.20: Granger Causality test for Peacock and Wiseman Version for 1968-2010 with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGE does not Granger Cause LGDP	6.65097	0.00356
LGDP does not Granger Cause LGE	1.51625	0.23360

Table 9.21 shows the probability values from the Granger Causality test for the first part of the split data 1968 to 1989 with real GDP. The reported F-statistics are standard test for the joint hypothesis that LGE does not Granger Cause LGDP. As can be seen, in both cases, the probability for accepting the null-hypothesis is lesser than the rejection value, bi-directional causality is established for 1968-1989 period.

Table 9.21: Granger Causality test for Peacock and Wiseman Version 1968-1989 with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGE does not Granger Cause LGDP	7.6638	0.022
LGDP does not Granger Cause LGE	4.5697	0.102

The results in Table 9.22 for the period 1990-2010, shows that LGE causes LGDP, while the result for LGDP causing LGE is not that strong albeit the results show that LGDP causes LGE about 50% of the time.

Table 9.22: Granger Causality test for Peacock and Wiseman Version from 1990-2010 with Real GDP

Null Hypothesis	F-Statistic	Prob.
LGE does not Granger Cause LGDP	18.169	0.001
LGDP does not Granger Cause LGE	1.3858	0.500

(ii) Granger Causality Test with Real Non-Oil GDP

Table 9.23 shows the probability values from the Granger Causality Test for Peacock and Wiseman version for the period of 1968-2010 with real non-oil GDP. The reported F-statistics are standard test for the joint hypothesis indicating that LGE does not Granger Cause L Non-Oil GDP. In the case of Saudi Arabia, the probability for accepting the null-hypothesis was only 0.48% while 99.52% reject this hypothesis, which means LGE causes L-Non-Oil GDP around 99.52% of the time in the Peacock and Wiseman's version. In table 9.23, the feedback of causality from L-Non-Oil GDP to

LGE is presented where the probability for accepting the null-hypothesis is only 32.61% while 68.39% reject the hypothesis, which means L Non-Oil GDP causes LGE about 68.39% times in the case of Saudi Arabia. It can, therefore, be concluded that there is bi-directional causality between government expenditures and GDP in the case of Peacock and Wiseman version of Wagner's Law in search of 'displacement effect'.

Table 9.23: Granger Causality test for Peacock and Wiseman Version for 1968-2010 with Real Non-Oil GDP

Null Hypothesis	F-Statistic	Prob.
LGE does not Granger Cause L Non-Oil GDP	7.85341	0.0048
L Non-Oil GDP does not Granger Cause LGE	1.72531	0.3261

The probability values from Granger Causality test in Table 9.24 for 1968 to 1989 with real non-oil GDP, shows that bi-directional causality exists between government expenditures and non-oil real GDP.

Table 9.24: Granger Causality test for Peacock and Wiseman Version from 1968-1989 with Real Non-Oil GDP

Null Hypothesis	F-Statistic	Prob.
LGE does not Granger Cause L Non-Oil GDP	8.288	0.016
L Non-Oil GDP does not Granger Cause LGE	4.292	0.117

As the results in Table 9.25 depicts, government expenditures causes GDP with a strong force. However, the feedback causality from GDP to government expenditures is rather weak, as L Non-Oil GDP causes LGE only about 15.3% of the time.

Table 9.25: Granger Causality test for Peacock and Wiseman Version from 1990-2010 with Real Non-Oil GDP

Null Hypothesis	F-Statistic	Prob.
LGE does not Granger Cause L Non-Oil GDP	49.41	0.0002
L Non-Oil GDP does not Granger Cause LGE	0.33105	0.847

9.6.4. Error Correction Model (ECM)

In this section, the Error Correction Model (ECM) for Peacock and Wiseman version of Wagner's Law for 'displacement effect' for real GDP and non-oil GDP during for the entire period (1968-2010) and also for the split data (1968-1989; and 1990-2010) is tested to identify the adjustment process.

(i) ECM with Real GDP

In the Table 9.26, the results for 1968 to 2010 period indicate that there is long-run causality that runs from GDP to GE, as the coefficient is statistically significant at 5% level. Thus, Peacock and Wiseman version of Wagner's Law for 'displacement effect' is found to hold for GDP in the case of Saudi Arabia.

Table 9.26: Causality with Error Correction Model (ECM) test for 1968-2010 with Real GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.22349	-1.08
	L(GDP)	0.67767	1.67

As the results in Table 9.27 for the period of 1968 to 1989 indicate, that there is long-run causality that runs from GDP to GE. It can therefore be concluded that Peacock and Wiseman version of Wagner's Law for 'displacement effect' is found to hold for GDP in the case of Saudi Arabia.

Table 9.27: Causality with ECM with Real GDP for 1968-1989

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.52349	-1.54
	L(GDP)	0.86667	1.67

The results for 1990 to 2010 period indicate that there is long-run causality that runs from GDP to GE, and therefore it can be concluded that Peacock and Wiseman version is found to hold for GDP in the case of Saudi Arabia (Table 9.28).

Table 9.28: Causality with ECM with Real GDP for 1990-2010

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.6459957	-3.02
	LGDP	1.377322	0.87

(ii) ECM with Real Non-Oil GDP

The results in Table 9.29 for the 1968 to 2010 period with real non-oil GDP indicates that there is long-run causality that runs from non-oil-GDP to GE. Thus, Peacock and Wiseman version is found to hold for non-oil-GDP in the case of Saudi Arabia.

Table 9.29: Causality with Error Correction Model (ECM) test for 1968-2010 with Non-Oil GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.7523	-0.54
	L(Non-Oil GDP)	0.42890	0.78

In the Table 9.30, the results for 1968-1989 indicate that there is long-run causality that runs from non-oil real GDP to GE showing that Peacock and Wiseman version of Wagner's Law is found to hold for non-oil real GDP in the case of Saudi Arabia.

Table 9.30: Causality with Error Correction Model (ECM) test with Non-Oil GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.80127	-0.99
	L(Non-Oil GDP)	0.460949	0.81

The results in Table 9.31 for the second part of the split data, 1990-2010, In the show that there is long-run causality that runs from non-oil real-GDP to GE implying that Peacock and Wiseman version of Wagner's Law for 'displacement effect' is found to hold for non-oil real-GDP in the case of Saudi Arabia.

Table 9.31: Causality with Error Correction Model (ECM) test with Real Non-Oil GDP

Versions	Variables	ECTt-1	T-Stat
Peacock & Wiseman	L(GE)	-0.78442	-5.42
	L(Non-Oil GDP)	-0.12992	-1.43

9.7. CONCLUSION

Gupta (1967) and Diamond (1977) argued that the displacement effect leads to the share of national income devoted to government expenditure increasing with GDP due to further interventions during social, political and economic upheavals.

In this chapter, thus, the relationship between the government expenditure and economic growth is examined using the Peacock & Wiseman version of Wagner's Law for 'displacement effect hypothesis' for Saudi Arabia using time series annual data for the 1968 to 2010 period but also for the split data 1968 to 1989 and 1990 to 2010 with the objective of locating the structural change in the development and trend of government expenditures.

The results through all the method used and applied to the various levels of data indicate that there is a structural break in the trend and development of government expenditures in Saudi Arabia.

First, the regressions for the Peacock and Wiseman of Wagner's Law for 'displacement effect' are tested by using Ordinary Least Square (OLS) for real GDP and non-oil GDP.

Secondly, the Augmented Dickey-Fuller for stationary Unit Root Test for real GDP and non-oil real GDP is applied. In the case, the levels of the series tested, the null-hypothesis of non-stationary cannot be rejected for any of the series.

Third, these results suggest that there is a cointegrating relationship between government spending and national income. The equilibrium relationship indicates that the major determinant of government expenditure in Saudi Arabia, in the long run, is national income.

Fourthly, Granger causality tests were employed to confirm the causality direction between the variables. In the long run, statistically significant evidence is found indicating government expenditures Granger causing GDP and also the feedback causality in the GDP causing government expenditures. The similar results have been establishing by using the ECM.

In concluding, as the empirical evidence presented in this chapter shows through the analysis of structural break, it can be concluded that government expenditures in Saudi Arabia has not only followed a secular growth but also experienced structural jumps from one period to another due to certain economic reasons such as the large oil revenues due to oil shocks, and also negative impact of world recession and also the 1997 financial crisis on fiscal policy, but also due to political reasons such as Gulf Wars in the recent years. Further studies can be conducted through other empirical methods to locate the beginning and ending periods of the impact of such economic, social and political events have had on the trend and development of public expenditures in Saudi Arabia, as this study only shows the structural breaks but not the periods of impact. Thus, it can be concluded that this study provides initial empirical evidence in favour of 'displacement effect hypotheses of Peacock and Wiseman through using Peacock and Wiseman version of Wagner's Law in different forms and through different econometric methods.

CHAPTER 10

DISCUSSIONS AND CONCLUSION

10.1 OVERVIEW

Government expenditures are funds spent to actualise the activity and performance of the public sector aiming to increase the welfare of society and the economy as a whole. However, the expansion of government activities is a political issue as well as being an economic issue. The role of the state in economy is a subject of debate for centuries. Regardless of the political culture of the nations, as indicated in the literature, a secular increase has been observed in the size of public expenditures in most of the countries in the world for different reason which ranges from welfare oriented aims to developmentalist reasons. In addition to the large literature searching for the determinants of increasing size of government, an equivalently large number of studies also have looked for the relationship between government expenditures and economic growth, as it is perceived that there is a causal relationship between government expenditures and GDP. However, Wagner (1883) suggested that increased government spending was because of growth in the GDP and not a cause, unlike Keynes (1933), who believed that government expenditure is an independent factor, and a political tool to influence growth.

It is the aim of this study to search for the perceived causal relationship between government expenditures and economic growth in the case of Saudi Arabia., which is a developmentalist but at the same time is a rentier state. The Saudi economy mainly involves the exporting of oil and gas, and Saudi Arabia has the largest reserves of crude oil in the world – an estimated 266.7 billion barrels. This is equivalent to 57% of the reserves of the Gulf Cooperation Council countries and 29% of the total reserves of OPEC, and accounts for 20% of world reserves (www.gulfbase.com, 2011). The Kingdom of Saudi Arabia also ranks as the largest producer and exporter of oil in the world where it plays a leading role in the OPEC, producing 28% of total OPEC production. Average oil production per day in 2009 was 8.055 million barrels and in 2008 average production was 9.113 million barrels per day. In terms of its contribution to the economy, the oil sector accounting for 90% of total export earnings, 80% of government revenues and 45% of the gross domestic product. Due to the heavy presence of oil in the economy, about 40% of GDP comes from the private sector (Ministry of Economy and

Planning, 2010), which at the same time makes Saudi Arabia's political economy as a rentier state.

Due to the increase in oil prices in recent years but also because of the oil shocks in 1970s, Saudi Arabia generated large wealth from oil revenues. In recent years, the country recorded significant economic growth during the period from 2003 to late 2008 on the back of rising oil production and prices. However, in particular since Saudi Arabia became member of WTO in 2005, Increases in foreign direct investment and government spending to develop the contribution of non-oil sectors are large and influential, which mainly aims to reduce the role of the state and also oil in the economy. Thus, economic diversification led by the government has been a recent policy in development plans as well.

It should be noted that due to the increasing oil prices, the real GDP of Saudi Arabia rose by 4.6% in 2008 compared to 2007 when the growth rate was 3.5%, but decreased to 0.15% in 2009 due to the global crisis. The real growth rate of the economy is expected to be about 3.7% in 2010 and to 4% in 2011 due to an expected global economic recovery (www.gulfbase.com, 2011).

The Saudi economy has seen unusual changes either through mutations or through the oil booms in the region for more than four decades (1968-2010). The government has decided that during this period of extraordinary gains in revenues and general economic surplus, Saudi Arabia will foster developmentalism to assure that the future growth of the Kingdom will be through the development of physical infrastructure and the development of human resources. However, being a rentier state, the state's economic role is open to question but also importantly the government failure is something perhaps should be considered in the case of Saudi Arabia in terms of the efficiency of government expenditures.

This chapter thus aims to provide a summary of the findings so far through the empirical chapters but also aims to provide further meaning to the results by reflecting on the results.

10.2 SUMMARISING THE FINDINGS

The aim of this research is to search for the causal relationships between government expenditure and GDP, in terms of GDP and Non-oil GDP for the Saudi Arabian economy. Hence, in addition to total GDP, non-oil GDP is also considered

with the objective of measuring the impact of government expenditures non-oil economy.

The empirical chapters in this research aim to estimate the economic relationships represented in Wagner's law in terms of the causal relationship between government expenditures and economic growth. The empirical research was extended by also examining Peacock and & Wiseman and Keynesian Relation as part of the macroeconomic models within the field. It should be noted that each model tested with overall GDP but also with non-oil GDP.

Using aggregate annual time-series data for Saudi Arabia for the period of 1968-2010, initially the propositions of the six existing versions of Wagner's law have been considered using the Ordinary Least Square (OLS). The following tests were performed: Unit Root, Co-integration, Error Correction Model (ECM), and application of Granger-Causality-testing. The empirical results suggest that testing for the six existing versions of Wagner's law verifies and validates also the relationship between government expenditure and economic growth in Saudi Arabia.

Table 10.1: Summary of the main Results Theories Explaining the Government Expenditure Growth for real GDP and Non Oil Real GDP

Models	Period	Estimations Methods			
		Unit Root	Cointegration	ECM	Granger Causality
Wagner's Law	1968 - 2010	Stationary in the first difference I (1).	There is a long-run relationship between government expenditure (GE) and economic growth (GDP)	The long-run causality runs from GDP to Government Expenditure	Bi-directional
Keynesian Relation	1968-2010				Uni-directional
Displacement Effect	1968-2010				Bi-directional
	1968-1989				
	1990-2010				

In chapter seven, the empirical results introduced strong evidence in support of Wagner's Law in the case of Saudi Arabia. The results show that the elasticity of government expenditure with respect to GDP were greater than unity in the six versions of Wagner's law, , which leads to, good evidence of supporting Wagner's predictions.

The results of the regression analysis – for six versions of Wagner's Law using OLS for real GDP and non-oil real GDP – show that the elasticity coefficient of government expenditure, with respect to GDP, was greater than unity in Peacock and

Wiseman (1968), Pryor (1969), Goffman (1968), and Gupta (1967). Thus, the findings in the case of these four versions are in accordance with Wagner's expectation. The empirical results also indicate that the elasticity coefficient of government expenditure, with respect to GDP, is inelastic in the case of Musgrave's (1969) and Mann's (1980) versions of Wagner's Law, although their independent variable is still statistically significant. Nagarajan and Spreares (1990), furthermore, stated that in order to verify Wagner's Law, the income elasticity needs to be $E > 1$, i.e. greater than unity, and the ratio income elasticity needs only be $E > 0$, i.e. greater than zero. According to this rule, Mann's version of Wagner's Law does not hold in the case of Saudi Arabia.

As regards non-oil real GDP – the independent variable in the versions of Wagner's Law – Peacock and Wiseman provide support for Wagner's Law, whilst Pryor's, Musgrave's and Mann's versions do not hold for Saudi Arabia. In addition, since elasticity is greater than unity in the results of Goffman's model, this version of Wagner's Law is consistent for Saudi Arabia. Moreover, Gupta provides evidence for Wagner's Law in the case of Saudi Arabia; the expected elasticity is higher than a unit, i.e. $E > 1$. Moreover, since the income elasticity needs to be higher than a unity ($E > 1$), and the ratio income elasticity is expected to be higher than zero ($E > 0$), Mann's version does not provide evidence for Wagner's Law in Saudi Arabia.

In extending the analysis, the unit root test in the form of Augmented Dickey-Fuller is utilised to examine stationarity of the time-series of all the variables. The results indicate that the levels of all series are non-stationary, and hence all the variables are cointegrated at first order $[I(1)]$.

The results suggest that there is a co-integrating relationship between government expenditure and GDP per capita, and Wagner's Law holds in the case of Saudi Arabia through the cointegration analysis. Therefore, the equilibrium relationship indicates that the major determinant of government expenditure in Saudi Arabia, in the long run, is national income.

The econometric analysis further employs the Granger causality test in order to verify the causality and its direction between the variables. The results demonstrate statistically significant evidence in favour of per capita GDP for the long-run relationship. In addition, it is found that Granger-causing the share of government expenditure in GDP. This finding is consistent with the expectation of Wagner's Law. Thus, the result of the causality test indicates the existence of strong feedback causality for all versions of Wagner's Law in the long run.

Lastly, by using the Error Correction Model (ECM), it is established that all the six versions of Wagner's Law are significant for both real GDP and non-oil-GDP in the case of Saudi Arabia. This suggests a short-run adjustment process towards long-run equilibrium.

After establishing that Wagner's Law in all version valid and can explain the nexus between government expenditures and economic growth in Saudi Arabia, Chapter Eight focused on testing Keynesian relation by reversing the three versions of Wagner's, Law, using time series annual data for the period 1968 to 2010.

In the analysis, three distinct time series techniques are applied: Initially, the regressions analysis utilised for three versions of Keynesian Relations using Ordinary Least Square (OLS) with real GDP and non-oil GDP. In the next step, the Unit Root tests through Augmented Dickey-Fuller test for stationary is applied with real GDP and non-oil GDP. In the following step, cointegrating test for real GDP and non-oil GDP. Finally, causality tests by using Granger Causality tests are conducted together with ECM.

In overall, the findings in this study suggest that there is a cointegrating relationship between the share of government expenditure in national output and per capita income. The equilibrium relationship indicates that the major determinant of government expenditure in Saudi Arabia, in the long run, is national income. In the case of Real GDP and Non-oil GDP, the versions of Peacock & Wiseman, Goffman and Gupta show that co-integration relationships is found and the test supported the existence of one cointegration.

Finally, Granger's causality tests were used to confirm the causality direction between the variables by using the ECM. Since there exists an ECM to describe the short run adjustment to equilibrium, three versions of the Keynesian Relations are found to hold for both (GDP) and (Non-Oil-GDP) in the case of Saudi Arabia.

The findings in this study verify the importance of Keynesian relation for a late developing country such as Saudi Arabia, where the private capital for economic development until recently was limited. The fiscal policy in the form of government expenditures has been the engine of economic growth and development in Saudi Arabia. The government revenues raised from oil wealth in Saudi Arabia have been the main source of economic and social development of the country, which generated employment and expansion of the economy as predicated by Keynes.

The findings of this research, hence, verified the validity of the Keynesian Relation in the case of Saudi Arabia, and also indicate the importance of government expenditure for economic development in the cases where the private capital is in short supply as was in Saudi Arabia. This does not imply that government's role for economic growth and development is applauded without any questioning, as the efficiency and effectiveness of using government expenditure is a matter of another debate.

After establishing the validity of Keynesian Relation in the case of Saudi Arabia, an attempt was also made in Chapter 9 to search for the validity of Peacock & Wiseman's 'displacement effect'. The model is expanded, as mentioned before, with the addition of political and economic dummy variables.

In this chapter, thus, the relationship between the government expenditure and economic growth is examined using the Peacock & Wiseman version of Wagner's Law for 'displacement effect hypothesis' for Saudi Arabia using time series annual data for the 1968 to 2010 period but also for the split data 1968 to 1989 and 1990 to 2010 with the objective of locating the structural change in the development and trend of government expenditures.

The results through all the method used and applied to the various levels of data indicate that there is a structural break in the trend and development of government expenditures in Saudi Arabia.

First, the regressions for the Peacock and Wiseman of Wagner's Law for 'displacement effect' are tested by using Ordinary Least Square (OLS) for real GDP and non-oil GDP.

Secondly, the Augmented Dickey-Fuller for stationary Unit Root Test for real GDP and non-oil real GDP is applied. In the case, the levels of the series tested, the null-hypothesis of non-stationary cannot be rejected for any of the series.

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Fourthly, Granger causality tests were employed to confirm the causality direction between the variables. In the long run, statistically significant evidence is found indicating government expenditures Granger causing GDP and also the feedback causality in the GDP causing government expenditures. The similar results have been establishing by using the ECM.

In concluding, as the empirical evidence presented in this chapter shows through the analysis of structural break, it can be concluded that government expenditures in Saudi Arabia has not only followed a secular growth but also experienced structural jumps from one period to another due to certain economic reasons such as the large oil revenues due to oil shocks, and also negative impact of world recession and also the 1997 financial crisis on fiscal policy, but also due to political reasons such as Gulf Wars in the recent years. Further studies can be conducted through other empirical methods to locate the beginning and ending periods of the impact of such economic, social and political events have had on the trend and development of public expenditures in Saudi Arabia, as this study only shows the structural breaks but not the periods of impact. Thus, it can be concluded that this study provides initial empirical evidence in favour of 'displacement effect hypotheses of Peacock and Wiseman through using Peacock and Wiseman version of Wagner's Law in different forms and through different econometric methods.

10.2.1. Reflecting on the Findings

In overall, the results presented in this research and summarised in this section clearly demonstrates that government expenditures has been an important determinants of economic growth in both the measure, namely real GDP and non-oil real GDP. However, the results also indicate that the direction of causality worked in both ways; while government expenditures resulted in higher economic growth; higher economic growth in turn generated the necessary wealth for the growth in public expenditure for economic development and welfare of the society.

While the results validates the presence of Wagner's Law in the case of Saudi Arabia for the period in question, the validity of the Keynesian Relation is also established through the rigorous analysis presented in this research. Importantly, the findings also show that Peacock & Wiseman's 'displacement effect' is also verified in the case of Saudi Arabia, as the country has gone through breaks in its economic growth and public expenditure growth due to economic (oil shocks and global recession) but also political events (wars).

Saudi Arabia, as mentioned, is a developmentalist rentier state, which is heavily depended on the wealth generated from oil export. Due to having traditional modes of production based on kinship or tribalism, in modern times this still continues to have impact on the political economy of the country in the sense that instead of tribe, the state

remains at the heart of developing the economy and society but also provide for the welfare need of the society. Thus, the heavy presence of state in economy can perhaps be justified through economic rationale by responding to the capital need of the society, it is at the same time a cultural, traditional and historical reality and necessity.

While it is true that Saudi society and its political economy have undergone important transformation through being party to international bodies such as WTO but also through economic and financial liberalisation, which has resulted in a growing bourgeoisie and expanding private sector, the traditional weight of the state is a reality continues to exist either as a 'benevolent administrator' (dawlah al kareem) or a 'leviathan'. For example, in responding to the growing political changes in the region, Saudi government committed large public funds to overcome the financial difficulties of individual citizens including creating jobs for the unemployed in the public sector. Thus, regardless of assessing the economic rationale for such commitments, political necessities create pressure for the expansion of the state's economic involvement. It is therefore not a surprise that the youth prefer to work in the public sector despite the expanding private sector and the Saudization policies (Al-Shehri, 2009). Thus, the thin line between the 'benevolent administrator' and 'leviathan' is becoming rather invisible in the process of further expansion of the state's involvement in the economy. This is particularly important in considering the level of economic development in Saudi Arabia and the amount of public funds over the years allocated for this purpose. In other words, the efficiency of the use of public funds and the effectiveness of the outcome when assessed it clearly indicates that more could have been achieved so far.

The question, as mentioned, comes to the cultural, traditional and historical reality of tribal and in modern times state based mode of production; it is a legacy that will remain there for the foreseeable future, as the issue is not only a supply oriented problem, but the general public is also intoxicated with the economic and financial power of the state and therefore consider the 'state the father' to deliver them with the services and financial power they ask for. Thus, rentier economy is supported and popularised by rentier mentality of the public, which helps to sustain the growing public expenditures in the country despite the economic and financial liberalisation has taken place in the country in the recent history. The recent political developments in the Arab countries does not help to reduce the size of the state in Saudi Arabia, as further rentier oriented spending has been promised to the society to overcome political instability in the kingdom.

It should, however, be noted that the development of the Saudi society has been possible by the heavy state involvement so far. While this fact should remain in mind in understanding the Saudi political economy, it is also important to question the efficient use of public resources for economic development. Such questioning should also be extended to welfare expenditures in terms of their efficiency. As observation states that such an academic study would find the inefficiencies in the public spending whether in economic or welfare oriented realms. This is an urgent matter requiring direct attention, as such a study may prove that the economic development achieved so far would have costed lesser and the welfare expenditure are economically and socially much higher than its socially optimum level, as they are very much determined politically.

10.3. POLICY IMPLICATIONS

The policy implications of this finding imply that the fiscal stance of the state plays an important role in the macroeconomy of the state and the welfare of the society and individuals.

The growing public expenditures not only due to economic rationale such as developmentalist need, but also due to public pressure indicates that stronger position should be taken in controlling the public expenditures or at least in moderating its expansion. While this study has not attempted the measure the efficiency and the effectiveness of public expenditures, the observation from real life indicates that government expenditures are inefficient and ineffective in the country, and therefore rather than expanding the public sector further an independent private sector must be expanded in size but also in its power. In other words, economic diversification is a need in Saudi Arabia which should focus on creating an independent private sector, as this will help to transform the rentier economy and rentier mentality of the society for a productive economy and enabled and functioning individuals.

Saudi Arabia attempted to liberalise its economy and financial sector and has been successful in this process through privatisation and other policies. In addition, being a member of the WTO makes its necessary for the country to reduce the public sector to prevent the crowding out impact in the economy. Therefore, rather than increasing public spending due mainly to political pressures as in recent years, rentier mentality has to be replaced with productive individuals in the minds of the citizens. By the same token, the rentier expectations in the economy must be removed in favour of independent business class. Proactively pursued economic diversification of the economy

away from oil will be an important part of such a policy, which is, thus, essential to prevent the state to grow further but also conduct itself with efficiency and effectiveness.

As part of economic and financial liberalisation and reducing the size of the government, privatisation has been taken as an important economic policy. However, privatisation in Saudi Arabia needs a strategy in support of the business to provide the proper role of the private sector, in order to support the economy through the expansion of independent private sector to complete its role and meet the requirements of overall economic growth.

It should, however, be noted that while the role of the state in economic activity is undergoing change, the development of the private sector is essential for the robust nature of the state. It is expected that the development of the private sector means assuming a great role in the future for the provision of social services such as health, education, housing and others. It is true that the state intends to move slowly away from sectors undertaken by the private sector, and it has taken measures to support economic reform of the private sector.

Saudi Arabia has identified eight strategies with the objective of reducing the public sector and expanding the private sector (Ministry of Economic and Planning, 2010).

- (i) to improve the efficiency of the national economy and enhance competitiveness to meet challenges, including with regional and international competition;
- (ii) to encourage private-sector investment and encourage active participation in the national economy, increasing the share of the private sector in the GDP to achieve growth within the national economy;
- (iii) to develop the citizens' participation in productive economic activity rather than sustaining rentier mentality;
- (iv) to develop national capital and foreign investment locally;
- (v) to increase employment opportunities, and the optimum operation performance of the national labour force;
- (vi) to continue to achieve a fair increase in per capita income through the contribution of the private sector;
- (vii) to provide services to citizens, investors in a timely fashion, and in a cost-efficient manner, and
- (viii) to rationalise public expenditure and reduce the fiscal tension on the state, and to increase government revenues.

As part of economic liberalisation, privatisation can help to reduce the size of government, hence, but also helps to diversify the wealth generation in the economy. In particular, together with other measures to create a robust private sector, privatisation helps to withdraw the state from economic activity and can pave the way for the further reduction of the size of the state by withdrawing the state from welfare services.

10.4 POLICY RECOMMENDATIONS

Recent development and economic policies in Saudi Arabia shows that policies, incentives and regulatory initiatives have contributed to expand the role of the private sector in the national economy and increase its effectiveness, leading to a steady increase in economic efficiency of the sector. The total contribution of the private sector to the GDP was 6.63%, and non-Oil GDP 89% at the end of the Eighth Development Plan. This indicates that the private sector can contribute to the economy through the opportunity spaces created by economic diversification. Therefore, the following policy recommendations suggested by this study:

- (i) The private sectors must engage effectively in the Saudi development plan that focuses on long-term goals. The development plan must take into account how to form a strong relationship between all sectors and how the function of each sector compliments the function(s) of the others.
- (ii) Oil revenues must be used as an effective tool to contribute to the expansion of the private sector;
- (iii) The government should reduce its role and size to enhance and encourage the ability of its economy to function effectively, allowing more opportunities for the private sector in the economy.
- (iv) The government should adopt creative policies that aim to achieve gradual reduction in reliance on oil through a diversification of production within the economy. Those policies must be constructed in a way that enables the country to face an expected future of depletion of oil reserves. In addition, time constraints for achieving those policies of diversifying the production of the economy need to be set.
- (v) The people must understand and recognise that the majority of the existing outcomes of 'development' in Saudi Arabia are the result of oil revenues and not the outcomes of well-organised development plans and policies. Therefore, individual citizens should take up more responsible roles in the economy and society beyond the easy life offered by rentier mentality.

- (vi) SME development should be supported as the backbone of the stronger private sector.
- (vii) The institutional framework, which sponsors the development of the private sector through legal reform should proactively move away from heavy bureaucracy and red-tape and should support the developments in the private sector but also for small businesses needs
- (viii) Support for the Saudi stock market is still seen as modest on the largest Arab stock markets. Privatisation can also exercise a significant impact on the resettlement of capital with the creation of greater opportunities for investment while providing a climate to attract foreign investments, primarily in order to obtain technical support, technology, and marketing expertise.
- (ix) Allowing the government to reduce its budget deficit. It would also suggest that it does not have to continue encouraging shifts in government expenditure towards non-oil activities.

These recommendations, however, are mostly related with the political economy of the state, which is determined by the culture, traditional and historical forces of the society. Thus, main changes in the political economy of the country, such as move from rentier state, directly indicates the changes in the social formation of the society, which may not be an easy task considering the determining forces of the social formation. However, the country is in such a juncture that the legacies of culture, tradition and history may not be enough to create a competitive economy, which can sustain itself against the global forces beyond the position, provided by the oil revenues. The economy and society needs to regenerate itself according to the global political economy beyond the traditional modes of production and rentierism oriented distributive kinship or tribal modes of production.

10.5 FUTURE RESEARCH

This research aimed at examining the association between government expenditures and economic growth in Saudi Arabia. However, there is a large literature on the determinants of increasing government expenditures. One of the research areas that can be developed on top of this study is hence the determinants of the increasing government expenditures in Saudi Arabia. In this, economic, political, social, demographic and public choice related factors can be considered.

Secondly, an attempt can be made to test the integrated model suggested by Brown and Jackson (1990). This can help to see various factors interactively working together leading to increase in government expenditures.

Thirdly, considering that Saudi Arabia is a rentier state, the political economy of the Saudi rentierism through supply but also through demand side can be examined.

An extension of rentier mentality, the impact of population and welfare demand on the Saudi public expenditure can also be an exciting study.

Importantly, however, the models suggested by public choice should be considered as important areas of research in Saudi Arabia such as the impact of bureaucracy on the growing size of the economy. Knowing that bureaucracy is an essential part of the state apparatus helping to distribute the wealth created by oil, the nature and aims of the bureaucracy in Saudi Arabia can constitute an exciting study. This can focus on the power of the bureaucracy and their role in the budgetary decision making to locate their role in the expansion of public expenditures.

10.6 EPILOGUE

This study aimed at exploring and examining the causal relationship between the government expenditures and economic growth in Saudi Arabia in the period of 1968-2010.

The foundational chapters and in particular the empirical chapters testify that the aims of this research has been achieved and the objectives of the research have been fulfilled.

The finds of the study clearly shows that there is a clear causal relationship between government expenditure and the economic growth and the causality relationship between government expenditure and the GDP supports both Wagnerian and Keynesian Relation. The study also found that Peacock & Wiseman's 'displacement effect' has been effective in certain period of economic booms and busts but also during political turn oils such as the case with the Gulf Wars.

This research, hence, is now considered completed at this stage; however, similar to any other research it is a continuous process and will be extended by the relevant future research in the field.

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